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ORIGINAL COMMUNICATIONS.

ART. XVII.—*Remarks on Digitalis.* By WATSON J. WELDING. (*Extract from Inaugural Thesis.*)

ALTHOUGH this plant is not a native, it is cultivated in this country to some extent, as well for medicinal purposes as for its intrinsic beauty. The seeds should be sown as early as possible, after the commencement of warm weather, that the plants may attain sufficient vigour to withstand the severity of the winter; being a biennial it does not flower till the second season. This plant succeeds best in a light soil and dry situation, where it can receive the full influence of the sun's rays.

It flowers in July, at which time the leaves should be gathered for medicinal purposes. These are to be immediately dried in the sun, or in a warm room, after having previously deprived them of their footstalks and midribs, which are comparatively inert, and are apt to become mouldy. When thoroughly dry, the leaves should be kept in close drawers or tin cases. If sufficient care has been observed in drying, they will have strong, but not unpleasant odour, and present a fine green colour.

The greatest part of the Digitalis used in this city, is obtained from the Shakers, of Lebanon, in the state of New

York. It is cultivated in large quantities by them, but is often in a mouldy state, from its being packed before it has been perfectly dried, and hence becomes deteriorated.

It is the practice in some shops, to keep a considerable quantity on hand, in the state of powder; this plan is a bad one, as the digitalis thus loses much of its strength, and will disappoint the expectations of the physician. Only a small portion of this and similar articles should be kept in a powdered form, and in well stoppered bottles, secluded from the light.

Digitalis imparts its peculiar properties to cold or hot alcohol, and to boiling water. The decoction or infusion reddens litmus paper, and is precipitated by the salts of iron, of a black colour; by the nitrate of silver of a yellowish white; by the sulphate of copper of a greenish brown; by the sub-acetate of lead of a yellow, and by lime of a brownish green. The nitric, hydrochloric and sulphuric acids also produce precipitates.

Alcohol added to the decoction, renders it of almost a jelly-like consistence, probably owing to the mucilage it contains.

On distillation with water, a very small portion of volatile oil was obtained, (not more than one or two minims from two ounces of digitalis,) nearly colourless and of about the same density as water. As the vapour of the water condensed, it deposited a whitish flocculent substance, at first in such minute quantities, that I was unable to collect it. It possessed the peculiar odour of the leaves in a very high degree, and was volatilized in the course of three or four days, by exposure to the air; afterwards the deposit was of a whitish colour, and of a concrete form; this remained floating in the water, giving it a peculiar sweetish and slightly aromatic taste. It was, however, in so small a proportion, that I found it impossible to separate it from the filter.

Four hundred and eighty parts of the leaves, yielded one hundred and twenty of watery, and twelve of alcoholic extract; the first was of a reddish brown colour, and of a pillular consistence; the latter had an unctuous feel, and a nauseous, slightly bitter taste, was of a dark colour in the mass, but of

a beautiful sap green when in thin laminæ, being principally composed of fatty matter, in combination with the chlorophylline.

Inversely, the product was one hundred and sixty parts of alcoholic, and fifteen of watery extract. The former was of a deep blackish green colour in mass, of a pillular consistence, having a peculiar smell, and a bitter nauseous taste. The latter was of a light reddish brown colour, and had a sweetish, mucilaginous flavour, leaving, however, a rather unpleasant taste in the mouth.

By digesting the leaves in alcohol, evaporating to dryness, boiling in distilled water with some pure magnesia, for a considerable time, until the liquor was nearly colourless, then filtering, washing the precipitate with distilled water, drying, treating with boiling alcohol, and again evaporating, a brownish coloured, semitransparent mass was obtained, of a very bitter unpleasant taste, and having an alkaline reaction on litmus paper, previously reddened by an acid.

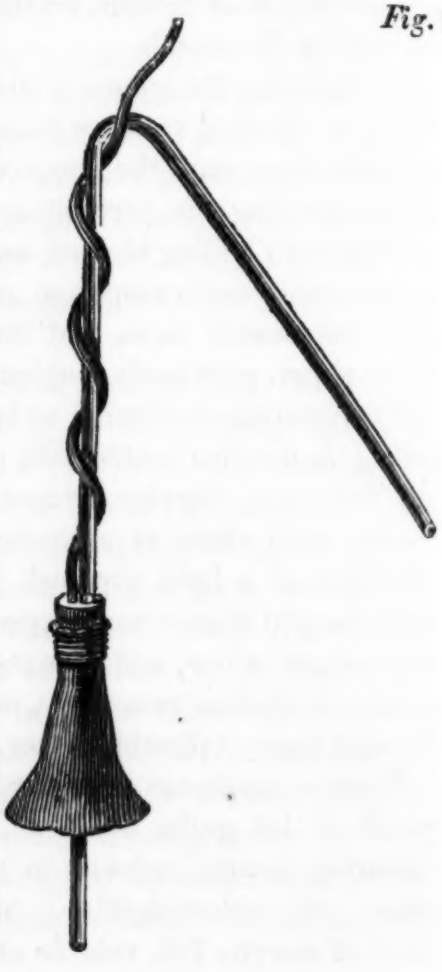
By digesting in alcohol as before, evaporating to dryness, boiling in distilled water with protoxide of lead to neutralize any free acid, filtering, evaporating to dryness, treating the residue with ether, at a moderate heat, and evaporating, a substance of a light greenish brown colour, remaining in a soft adhesive state when exposed to the air, was obtained. It had a slight odour, and an extremely bitter permanent taste, possessed alkaline properties, neutralizing several of the acids, but was uncrystallizable either alone or in combination.

From experiments upon the leaves, I believe they are composed of, 1st, gallic acid; 2d, mucilage; 3d, reddish brown colouring matter, soluble in water, insoluble in alcohol or ether; 4th, chlorophylline; 5th, saccharine matter; 6th, a trace of starch; 7th, volatile oil; 8th, concrete flocculent substance; 9th, gluten; 10th, fatty matter; 11th, extractive matter; 12th, lignine or woody fibre; 13th, a peculiar principle soluble in alcohol and ether.

ART. XVIII.—*Improved Syphons, by* R. HARE, M. D. *Professor of Chemistry in the University of Pennsylvania.*

SUBJOINED are engravings of two Syphons, which I have found useful in my laboratory. Of these, one represents the more complete method of execution; the other, that which can be more easily resorted to by Chemists in general, who have not easy access to skilful workmen.

Fig. 1



The construction last alluded to, is represented by fig. 1. A cork is perforated in two places parallel to the axis. Through one of the perforations, the longer leg of the syphon passes; into the other, one end of a small lead tube is inserted. In order to support this tube, it is wound about the syphon until it approaches the summit, where a portion, of about three or four inches in length, is left free, so that advantage may be taken of its flexibility, to bend it into a situation convenient for applying the lips to the orifice. About the cork, the neck of a stout gum elastic bag is tied air tight. The joinings of the tubes with the cork, must also be air tight. The lower half of the gum elastic bag is removed, as represented.

In order to put this syphon into operation, a bottle must be used, having a neck and mouth of such dimensions as to form an air tight juncture with the bag when pressed into it. This object being accomplished, the air must be inhaled from the bottle, until the diminution of pressure causes the liquid to come

over, and fill the syphon. After this, on releasing the neck of the bottle, the current continues, as when established in any other way.

Fig. 2

Fig. 2 represents the more complete construction. In this are two metal tubes, passing through perforations made for them in a brass disk, turned quite true. Through one of these tubes, which is by much the larger, the syphon passes, and is cemented air tight. The other answers the purpose of the leaden tube described in the preceding article. The brass disk is covered by a piece of gum elastic, which may be obtained by dividing a bag of proper dimensions. The covering thus procured, is kept in its place by a brass band or clasp, made to embrace both it, and the circumference of the plate, and to fasten by means of a screw.

Before applying the caoutchouc, it was softened by soaking it in ether, and a hole, obviously necessary, was made in the centre, by a hollow punch.

There is no difference between operating with this syphon, and that described in the preceding article, excepting that the juncture of the syphon with the bottle, is effected by pressing the orifice of the latter against the disk covered with gum elastic.

ART. XIX.—*Note on the Preparation of Phosphurets of Lime.* By Daniel B. Smith.

Having experienced much difficulty in preparing phosphuret of lime, in the mode usually directed in the treatises on chemistry, I have latterly made it in the following manner, with complete success.

In place of a tube eighteen inches long, and an inch in diameter, I take the neck of a broken gallon or half gallon retort, and close it at the smaller end. The glass is then coated with fire clay, which is allowed to become perfectly dry. I take the dome of one of the ordinary clay furnaces, and support it in an inverted position so that the lower part shall be six or eight inches above the brick floor or pavement. Two or three ounces of phosphorus are then put in the bottom of the retort neck, and the space above filled with small fragments of well burnt lime, the top being covered with powdered lime. Thus prepared, the retort neck is placed in the inverted dome with its closed end resting on the pavement, and a charcoal fire kindled around that part which is in the dome. When this is at a red heat, a few coals are placed on the pavement, which soon evaporate the phosphorus, and the process is completed. This is a trifling matter to put in print, but the increased diameter of the part of the neck which contains the lime, enables the latter to combine with the phosphorus as fast as it is volatalized, so that several ounces of phosphorus may thus be converted into phosphuret at one operation without the slightest escape of the inflammable vapour.

ART. XX.—*On some Chemical Arts known to the Aborigines of North America.* By Jacob Green, M. D. *Professor of Chemistry in Jefferson Medical College.*

No one who examines the vast ruins of ancient buildings, and other curious relics of the people who once inhabited the banks of the Ohio, the Mississippi, and many other of our

western waters, can resist the conviction that they were a race greatly superior in the arts of civilized life to the Indian tribes who now wander there. The skill of this mysterious and extinct people, in pottery, and in sculpture, as well as the beauty and symmetry of many other articles fabricated by them, has frequently been noticed by the American antiquary; but I am not aware that any author has stated that they were familiar with the art of manufacturing and of colouring glass.

Some rude processes of vitrification were undoubtedly known at very remote periods of time. The word translated *crystal*, in the Book of Job, xxviii. 17, is thought by many critics to refer to glass—at any rate, we know that ornaments of this substance were made before the epoch of the interesting story related by Pliny, respecting its accidental discovery by the Phœnician sailors. Several of the mummies taken from the catacombs near Memphis, which were probably embalmed 1600 years before the Christian era, were decorated with beads of glass. Glass beads of a blue colour have been found in the Druidical barrow of Stonehenge; even glass lachrymatories have been discovered in the tombs of the ancient Greeks, and many varieties of stained glass, taken from the ruins of Pompeii, were analyzed by Sir Humphrey Davy. These facts sufficiently prove that this substance was known to different nations, and at very remote ages.*

With regard to the colour of glass, some tint of blue appears to have been not only the most frequent, but also the most highly prized. No colour, perhaps, is more readily given to it than blueish green, or the colours imparted by copper. Almost all the ancient greens and blues examined by Davy were derived from copper. The blue pigment scraped from the painted walls of the baths of Titus, was found by him to be a *frit* composed of alkali and silica, fused with a quantity of the oxide of copper. The blue glass beads taken from the Egyptian mummies analyzed by Klaproth and other chemists, were ascertained to be coloured with the oxide of

* Glass, with the ancients, was used as an article of luxury or ornament; it is only in modern times, that it can be said to be a useful substance.

copper.* So well acquainted were the ancient Greeks and Romans with the various tints of blue derived from copper, that Vitruvius distinctly states the process; he says, "they are made by heating together sand, alkali, and filings of copper." Much more might be advanced to prove that *blue glass* was known, and might be very easily manufactured, in a remote and rude state of the arts; our present object, however, is only to mention a few facts, which appear to us as conclusive evidence that the aborigines of our country possessed this knowledge.

Among the Indian antiquities in "Lambdin's Pennsylvania Museum" at Pittsburg, I noticed, a short time since, a number of large beads of a greenish blue colour. The glass which composed them was slightly translucent, and not perfectly vitrified. They seemed to have been perforated by some sharp instrument, and differed in other respects, from those of modern European manufacture, now and for a long time so common among the Indians, that I was induced to inquire the particulars of their discovery. Mr. Lambdin informed me that they were found by himself, in excavating an ancient Indian mound near the banks of the Ohio. He showed me some of the crumbling bones of the skeleton which they probably once decorated, and a number of stone axes, arrow heads, pipes, and fragments of earthenware, taken from the same tumulus. These particulars convinced me that the relics must have belonged to one of the "ancients of the West," who flourished in these fertile and once thickly settled regions long before the voyage of Columbus. There can be no doubt that these beads were found as just described; but the question may arise, might they not have belonged to our present race of Indians? It has been said, though I have never seen it clearly proved, that our Indians sometimes bury their dead in the ancient mounds; and hence these glass beads may be of European origin. But the discovery of the pipes, axes, and earthenware deposited with them, removes all doubt;

* In the Philadelphia Museum there is an ancient Egyptian figure, of a light green colour, which is no doubt occasioned by the peroxide of copper, which always forms a green tint with carbonic acid and silica.

for these articles were certainly made by the people who constructed the mounds.

With great liberality and kindness, Mr. Lambdin presented me with some of these beads to analyze, and with very little trouble or skill, they were found to be composed, like similar ornaments on the Egyptian mummies, of copper, silica, and an alkali.

On exposing a small fragment of one of the beads on a piece of charcoal, to the flame of the common blowpipe, it *instantly* melted into a red globule; thus indicating the presence of a large quantity of alkali, and of the protoxide of copper. The alkali, I suppose to have been potash, for it is not probable that barilla could then be obtained, at so great a distance from the sea coast. Another fragment was pulverized, and fused in a platinum spoon, with about an equal weight of carbonate of potash; muriatic acid was then poured on the mass, in a test tube, the colouring matter was quickly dissolved, and the silica precipitated. On plunging the point of a penknife into the coloured solution, metallic copper was precipitated upon it, and on adding ammonia, the bright blue tint thus produced, proved that an oxide of copper was present.

That the discovery of glass must have happened by some such accident as the one related by Pliny, seems quite certain, and why might not this accident have occurred in America as well as in Europe? The conditions necessary for the formation of blue glass, must have been constantly occuring to our aborigines, if, indeed, they did not bring the art with them from the country from which they emigrated. Their familiarity with silex, and with native copper, and also with the use of intensely heated furnaces, is well established.* Nothing, therefore, could be more likely to occur occasionally than a *slag of blue glass;* and I have been so fortunate as to meet with what I suppose to be a slag of this kind, in the cabinet of Mr. J. Dobson, of this city. He informs me that it was

* Some of the vessels dug from the ancient mounds, have on them marks of fire; they bear as great a heat as the pots now used in glass manufactories, and are made of the same kind of clay—they are therefore supposed by Mr. Atwater to have been used as *crucibles*. See Archælogia Americana—p. 228–9.

found in the gold region, near the Chastetee river, which separates the Cherokee territory from the upper part of Georgia. This district of country is so remote from the ordinary intercourse of civilized life, that we cannot for a moment imagine this slag to be of recent origin. Indeed, some of our most acute mineralogists have pronounced it a native mineral. On analysis, however, it proved to be *blue glass*, very similar in constitution to the beads. On presenting to my friend, Professor Del Rio,* a piece of this slag, and a portion of one of the beads, the following results were obtained by him. "The bead, when submitted to the blowpipe on charcoal, without any flux, easily fused into a small red globule, proving that it contained the protoxide of copper in a large quantity. The fragment from Georgia contains a large portion of silica, and was more difficult of fusion. But when submitted to the blowpipe, with microcosmic salt, it melted into a whitish bead, which only on the addition of tin, exhibited the characteristic colour of copper."

Before closing this paper, a few remarks on some other colours used in painting by the aborigines of the west may be interesting.

We are informed, by Mr. Atwater, that the celebrated "*triune vase* found in an ancient work on the Cumberland river, is painted with various colours. One of the faces on the vase is marked with broad streaks of *yellow* round the eyes and ears—the other face with *reddish brown*, and the third is entirely covered with *vermilion*, or some paint resembling it;" brighter spots of the same tint are also on the cheeks and chin; he adds "that though these colours have been exposed to the damp earth for many centuries, they have notwithstanding preserved every shade in all its brilliancy." The vessel is composed of fine clay, rendered hard by the fire. The yellow and reddish brown, were no doubt produced by *iron ochres*—fragments of very remote antiquity. Davy discovered that the yellows in the Aldobrandini picture were all ochres;

* Professor Del Rio, it will be recollected, discovered in the brown lead ore of Zimapan, the new metal now called by Berzelius, vanadium.

those also on the pictured walls of Pompeii proved to be red and yellow ochres. The red paint on them was probably *minium*, or *red lead*, and not vermilion. Minium is a very ancient colour. Pliny says, lead was first converted into this red paint by a fire which occurred at Athens. We now find in many of the tumuli on the banks of the Ohio, portions of lead. The red colour on one vase, might also have been produced by an iron ochre, subjected to heat. Red clays are indeed now used by some Indian tribes for painting the face.

The *blacks* and the *browns*, so often noticed on the earthenware from the mounds, are all derived from carbonaceous matter.

The *white paint* now employed by our present race of Indians, is pipe clay;—the same substance was, no doubt, used by the "ancients of the west." Several white clays were employed in painting by most ancient European artists—fine aluminous clay, and fine chalk, were ascertained by Davy to form the white colours of the Aldobrandini picture.

From the facts which have now been stated, it follows that the aborigines of North America, were acquainted with some of those chemical arts, which in Europe, in after ages, were the foundation of chemistry as a science.

ART. XXI—*Remarks on Extemporaneous Pharmacy.* By Thomas H. Powers.

(*Extracted from Inaugural Thesis.*)

Extemporaneous Pharmacy as practised in this city, consists not only of the preparation of what may be strictly called extemporaneous formulæ, but also of many of the officinal preparations of the United States and foreign pharmacopœias, which from their great number and liability to deteriorate by age, together with the small demand for many of them, renders it more advisable for the druggist to prepare them when wanted, than to keep a stock, which is frequently spoiling on his hands.

Under this head may be included the preparation of all

mixtures, emulsions, infusions and decoctions; many of the pills and powders, together with some of the cerates, ointments, liniments, medicated waters and tinctures, when they (i. e. tinctures) are merely solutions in alcohol, or proof spirit.

The officinal mixtures are few in number, and the directions given for their preparation are generally sufficiently full to enable the student of pharmacy to compound them without difficulty. When making the *ammoniac* or *assafœtida* mixtures, clean tears or pieces should be selected; if this is not done, it will be necessary to strain the mixture; but when the pieces are quite pure and clean, this may generally be dispensed with, it only being necessary to pour the clear liquid off the undissolved part. If either of these mixtures are wanted in haste, warm water may be used for their preparation. They should be prepared in either a marble or composition mortar, of which one should be kept on purpose for assafœtida. For making the *almond* mixture, a marble mortar answers best, (though not generally used;) and when preparing it, only part of the water ordered, should be used at first, the mixture then strained, and the residue thrown back into the mortar, and rubbed with the remainder of the water. All the pharmacopœias direct powdered myrrh to be used for the *compound iron mixture;* but fine pieces of crude myrrh rubbed up with a portion of the water makes a much better mixture; the powdered myrrh is so dry, that it is scarcely acted on, even by the water and carbonate of potassa; besides, it contains any impurities that may accompany the crude; by selecting fine pieces of the latter, we avoid both these disadvantages.

Kino is occasionally ordered either to be dissolved in water, or suspended in mucilage; if we attempt to rub it down with water, or gum and water, it forms a cake beneath the pestle, which is very difficult of solution; this difficulty may be obviated, to a great degree, by using boiling water. The same may be said of extracts when similarly directed, provided the heat of the water would not be injurious to the article.

Camphor, when ordered in mixture, should be first powdered with a small quantity of alcohol, (M.v. or vj. being sufficient for ʒj. of camphor,) then any other dry articles which may

be directed with it, rubbed thoroughly in, (the object being to divide the camphor as finely as possible) and lastly, the liquid with which the mixture is to be made up, gradually added, constantly stirring.

Spermaceti is frequently directed to be made into an emulsion with yolk of egg or mucilage, or both together, and it is important to have the spermaceti finely divided; for this purpose the French authors direct it to be powdered with a few drops of oil of sweet almonds, which answers the purpose of an intermediate very completely. The gum and sugar, if any is directed, may then be rubbed with it—next the yolk of egg, and lastly, the water gradually added.

The *oily emulsions* are often a source of difficulty to the student of pharmacy. Some authors direct the oil to be first shaken with the powdered gum arabic, the water then gradually added, constantly shaking; the whole to be done in a vial; others direct them to be mixed in the same manner, but in a mortar; when made in a vial, part of the mixture of gum and oil adheres to the bottom and sides of it, and have to be separated from them by mechanical means; if the mixture be made in a mortar, the water must be very carefully added in a continued small stream, and the whole very dexterously stirred, in order to ensure success, and even then, it will not have the same milky appearance as when made with mucilage, which is now generally preferred for this purpose. The quantity of powdered gum arabic ordered in the recipe, should be made into mucilage, with double its weight of water, and if there be any sugar directed, it is added, with about half its weight of water; the oil then gradually added and well stirred in, and afterwards the water in the same manner. *Volatile*, and *fixed oils*, and *copaiba*, may be mixed or made into an emulsion in this way, with the greatest ease. One cause of failure in making these emulsions with mucilage, arises from the latter being made too thick. When this is the case, the oil and mucilage seem to unite, and form a compound which is not acted on by the water.

Castor Oil is frequently directed to be made into an emulsion with the white of an egg; in this case the white should

be first well stirred or beat up, and if there be any sugar ordered it must be added; then the oil, but very gradually, constantly stirring, and lastly, the water in the same manner. If we add any water to the white of the egg before rubbing up the oil, it is almost impossible to make a mixture.

There are no mixtures with which we have more difficulty than those containing *magnesia*, combined with *resins, gum resins, tinctures, sulphate of magnesia* &c. They all have a greater or less tendency to become solid, depending on the manner of mixing, and the proportions of the articles. Gum resins should be first made into an emulsion, the tinctures diluted, and the magnesia perfectly mixed with some of the watery menstruum with which the mixture is to be made, before adding one to the other, and the more dilute both can be made, the better. Sulphate of magnesia is generally dissolved previously to being mixed with the magnesia, and such resins as are prescribed with it, are mostly, if not always in the form of tincture.

A mixture called *Dewees' Carminative*, which is much used in this city at present, is a source of difficulty to most druggists; it is composed of magnesia ʒss., sacchar. ʒi., tinct. asfæt. grs. lx., tinct. opii. grs. xx., aquæ. f. ℥j., and when made with these articles, either by diluting the tinctures and then adding the magnesia and sugar, previously mixed with a portion of the water, by dropping them into the water, magnesia and sugar previously mixed, or by rubbing the tinctures with the magnesia and sugar, and gradually adding the water, the whole invariably becomes solid, or rather gelatinous, in the course of a few days; the best manner of making, perhaps, is to dissolve the sugar in one half of the water, and add this solution to the tinctures previously dropped into the vial intended for the mixture, then to rub down the magnesia with the remainder of the water, and lastly, mix together the two liquids thus prepared; mixed in this way, it will sometimes remain liquid, but cannot be relied upon, as a mixture of merely magnesia, sugar, and water, in the proportions for forming this compound, will frequently become gelatinous in the course of twenty-four hours. Of the two kinds of magnesia, kept in the shops of this city, viz. that prepared from

the American, and that from the English, or Scotch carbonate; the former seems to show rather the least disposition to solidify, although the latter is more smooth and free from sand.

Nitrous, nitric, and *muriatic acids,* are often prescribed with *spirit of nitrous ether;* and water and sugar is generally added to the compound; care should always be taken to mix these articles in such a manner that they will not react on each other, at least not violently; the acids should be diluted before adding the spirit of nitrous ether to them, and the sugar first dissolved and then added to the diluted acids; without these precautions, nitrous, or muriatic ether, will be formed when spirits of nitre is mixed with either of these acids, and oxalic, with nitrous, or nitric acids, and sugar. Sometimes with the former articles, when there is not sufficient water ordered to prevent their acting on each other, the quantity of ether formed and gas extricated, will be sufficient to break the vial in which the mixture is sent out, and this will happen generally after it is delivered to the customer, as the action does not take place until some minutes after mixing, and depends, too, on the proportions of the articles.

Mixtures of *lemon juice* saturated with *carbonate of potassa,* are frequently ordered by our physicians, and are often improperly prepared; some say that carbonate of potassa should be added until the mixture does not redden litmus paper; but this is not a very certain mode, as the carbonic acid, which remains in solution, will change the colour of litmus; the taste is perhaps the most certain test, but two scruples of subcarbonate of potassa will mostly saturate f. ℥j of lemon juice, although many physicians direct but half a drachm for the same quantity, and this last proportion makes the most pleasant mixture. When saturating lemon juice, it is always best to dissolve the carbonate of potassa in the water ordered, and then add the lemon juice, or else to first dilute the lemon juice, and then add the carbonate of potassa; this will generally prevent a flaky precipitate which is always formed when one is thrown into the other without either of them having been diluted.

As a general rule for making a mixture, when an insoluble

powder, or powders, are to be suspended in mucilage, we may say, first mix together the dry articles, and then add the aqueous menstruum with which the mixture is to be made; but sometimes it is necessary to reserve one of the dry articles, and add it to the mixture towards the last, as in the comp. iron mixture. When drops of any articles are directed, they should always be dropped either into the vial intended for the mixture, or into a clean graduated measure; the latter is much the most safe, particularly when many are ordered, as we then have a *tolerable* opportunity of judging of their correctness.

Tinctures, or alcoholic liquids of any kind, should be diluted before being added to mixtures, particularly if the latter contain gum, and part of the water ordered may be reserved for this purpose; emulsions are frequently spoiled with Spirit of Nitrous ether for want of this precaution.

When an acid is to be added to any of the salts of the vegetable alkalies, in order to dissolve them, the latter should be first mixed with a small quantity of the water, or syrup, which may be ordered, and the acid then added, and if any other dry articles are directed in the mixture, they should not be added until the solution of the vegetable alkali is completed.

2d. Infusions and Decoctions.—We are, in this city, but seldom called upon to prepare these articles, and the directions given by the pharmacopœias are so full, and the purpose, and the operations themselves so simple, that there is but little to say.

It is always necessary to use some discretion about the kind of vessel in which we prepare infusions or decoctions; for common use, tin vessels are the most convenient; the water for infusions may of course be boiled in them, but the infusion should be made in an earthenware vessel free from lead; with decoctions it is different, as tin vessels will only answer for boiling those articles which do not act on either it or iron; all such as will do so, should be prepared in glass or earthenware, or the iron vessels lined or coated on the inside with porcelain, will answer still better. Whichever kind

is used for this purpose, should be provided with a lid, and kept covered during the operation, in order to prevent, as much as possible, the oxidation of the extractive matter.

When a certain quantity of an infusion, or decoction, is called for in a recipe, it is a common practice to take the quantity of ingredients, ordered for the same bulk of water, as that of either of these directed; this, however, is a mistake, as part of the water is always absorbed by the dry articles, and consequently the liquid obtained has to be made up to the proper quantity with water.

To render these two preparations clear in a short time is often an object with us. Infusions may be first strained through a fine sieve, then permitted to stand for a sufficient time to settle, (for which purpose ten minutes will often answer,) and then be poured off; but with decoctions this would be improper, as part of the active principle frequently precipitates, by cooling, in the form of powder; the most of these, therefore, we must be satisfied with straining through a fine sieve, while hot.

3. Pills.—Most of the officinal pills are easily prepared, the formulæ having been well studied, and tolerably ample directions given for the purpose, but with the extemporaneous formulæ we receive, it is frequently otherwise, they often being badly combined, and still worse directions given for their preparation.

In the making up of pills generally, those articles which will require powdering should be first put into the mortar, and of these the most difficult, or such as will require the use of an intermediate in order to powder them, first; these are to be well rubbed together, and then such as are kept ready powdered, added; next, if volatile or other oils are directed, they must be rubbed in; and lastly, the articles with which the mass is to be made, such as soft extract or blue mass, if either of them are ordered, or else confection of roses, or mucilage &c. as may be most proper.

The following are the articles mostly used for this purpose, viz. water, syrup, mucilage, confection of roses, soap, liquor-

ice powder, crumb of bread, and occasionally, turpentines, alcohol, or tinctures.

1. *Water.*—Such as contain a sufficient quantity of aloes, rhubarb, watery extract, soap, or any substance that forms a plastic mass with it, may be made up with water; and it is generally the best article for the purpose, as it adds but little to their bulk, though sometimes it is objectionable on account of the pills becoming too hard by age; when adding it to rhubarb alone, sufficient should be put in to make a rather soft mass at first, otherwise it should be added carefully, particularly when the pills contain soap.

2. *Syrup.*—This is mostly used along with powdered gum arabic; but when the pills contain a considerable quantity of any extract, or gum resin, this is not necessary. It answers better than water when they contain a heavy powder, or rather always when the increase of bulk it occasions will not be objectionable. A mass made with it rolls out better, and the pills do not become so insoluble by age.

3. *Mucilage.*—This is used when the pills are composed of insoluble substances, but is mostly objectionable on account of their becoming too hard by keeping. This inconvenience may be remedied, in a great degree, by a small quantity of sugar, or what is still better, by using powdered gum and syrup instead of mucilage; the mucilage most used is that of gum arabic, but in some cases one of tragacanth, made strong, is preferable; pills containing oxide of bismuth, or sulphate of iron, may be made up with this last, better than with almost any thing else. Mucilage, though frequently directed in recipes, is seldom or ever kept in the shops of this city; when it is called for, the powdered gum and water are used; therefore when pills are to be made up with it, a sufficient quantity of the powder is mixed in with the dry articles, and then water enough added to make a mass; a very good substitute for the powders of gum arabic or tragacanth, is the compound tragacanth powder of the London Pharmacopœia, which contains both these articles, together with sugar and starch.

4. *Confection of roses.*—This makes a very good mass with dry powders, such as calomel, sulphate of quinia, &c., when

its bulk is not objectionable. Those who manufacture this article largely are *said* to add a small quantity of sulphuric acid, in order to heighten its colour when the roses alone do not make it bright enough, and it is necessary to guard against this, for although the quantity it contains might not be at all injurious to sulphate of quinine, or morphia, or perhaps to any of the salts of the vegetable alkalies, it would be to acetate of lead, which is frequently directed to be made up with it.

5. *Soap.*—This is mostly used with a small quantity of water, and answers very well for pills in which more of an essential oil, or oils, are directed than the dry articles will absorb; it also answers for balsams, resins, and camphor, but should not be used when the pills contain calomel, or the salts of the vegetable alkalies.

6. *Liquorice powder.*—This is used to give consistence to a pillular mass, when it is too soft, and also to absorb essential oils; but its principal use is to roll the pills in, and put with them after they are made, in order to prevent their adhering together.

7. *Crumb of bread.*—This is most used for pills of arsenic, corrosive sublimate, croton oil, and acetate of lead; the two first mentioned articles should be first dissolved, or at least rubbed in a mortar with a small quantity of water, and then a sufficient quantity of crumb of bread added to make a mass. Some physicians direct the corrosive sublimate to be dissolved in alcohol, and then crumb of bread added; but when this is done it is almost impossible to roll the mass, so that it becomes necessary to rub them together until the alcohol evaporates, and then add a few drops of water; acetate of lead may be first rubbed to a very fine powder, and then a sufficient quantity of crumb of bread added to make a mass; when it is used for croton oil it is generally necessary to add a small quantity of liquorice powder.

8. *Turpentines.*—When pills contain resins, these answer the purpose better than almost any thing else; such as contain guaiacum, make up very well with Canada balsam; but neither this or any other of the turpentines should be used

without the consent of the physician, at least in no extemporaneous recipe.

9. *Alcohol.*—This is seldom added to pills; but occasionally when they contain resinous extracts which are not hard enough to powder, and consequently difficult to mix; the addition of it is of great service.

10. *Tinctures.*—These may be used in similar circumstances in place of alcohol, but seldom are, unless directed in the recipe.

4. Powdering and Powders.—Powdering for extemporaneous recipes is usually performed in a mortar; occasionally a small mill, or else a grater, is used; the former for seed or berries, and the latter for orange peel, nutmegs, &c. When powdering in a mortar, care should be taken not to have so much of the substance to be powdered in at a time as to clog the pestle; this is more particularly necessary with heavy metallic substances, which indeed cannot be reduced to powder unless the quantity is very small in comparison with the size of the mortar; of this we frequently have an example with red precipitate. A mixed powder, when it exceeds a few drachms in weight, should be sifted, if convenient to do so, and afterwards the whole well mixed together; this much improves the appearance of it. In order to pulverize some substances, it is necessary to use an intermediate; for instance, camphor or iodine require a few drops of alcohol; spermaceti, a fixed oil, (oil of almonds answers best,) and some of the resins powder best with sugar, though gum may be used if it is ordered with them and sugar is not; the intermediate should be inert or at all events not act in a contrary manner from the substance to be powdered. With some mixed powders a reaction will take place, and this will sometimes produce moisture, and at others, change of colour; the former will take place with a mixture of sulphate of zinc, and acetate of lead, which, well known as the circumstance is, are still occasionally ordered together in powder. The difficulty may be partially obviated by using crystals of both the articles, and either laying one upon the other, or else merely mixing them lightly with a spatula; change of colour

is produced by the action of chalk on calomel, the mixture assuming a dull gray tint, becoming darker by keeping; as these two substances are generally divided into doses, this may be partially prevented by dividing the chalk and calomel on separate papers, and merely laying them together without mixing in a mortar.

Small quantities of some articles are frequently directed to be mixed with a certain quantity of gum arabic, in order both to give a vehicle for administering them, and to apportion the dose with greater accuracy; the gum for this purpose should not be in too fine a powder, if it is, they are difficult to mix; that which has been powdered in a mortar answers much better than that which has been ground in a mill and sifted in the same manner that Peruvian bark generally is, as the particles of the former, roll, as it were, over each other, while the latter, being more like fine wheat flour, rubs into a sort of cake. When a large and small powder are to be mixed together, part of the large should be first put into the mortar with the small one, and well mixed, and the remainder afterwards added.

Cerates, Ointments, and Plasters.—Such as we prepare extemporaneously, are mostly composed of a dry powder, and either lard or some one of the officinal cerates &c. which are kept prepared. In order to make a good article in this way, it is necessary to pay great attention to the fineness of the powder added; this is also of importance in regard to their medical effect. They are generally prepared by rubbing together the articles on a marble or composition slab with a steel spatula; when citrine, or any ointment containing free acid, enters into the composition, a horn or wooden spatula should be used, and in these cases it is also necessary to avoid a marble slab, substituting one of earthenware or composition in place of it; the same articles may be used for preparing the ointments of iodine, or iodide of potassium, but a mortar is mostly preferred. When making the ointment of iodide of potassium, the addition of a few drops of water renders it much more smooth; the great solubility of this salt enables us to add sufficient water to en-

tirely dissolve it, without inconvenience, but at the same time it has the disadvantage of hastening the change of colour that takes place in this ointment.

It is worth remarking that the iodide of potassium changes the colour of simple ointment in a much greater degree than it does that of pure lard. The ointment made of the usual strength (viz. ℈j to the ℥j) with simple ointment, changes in the course of a few days to a yellowish brown, but if made with lard, only to a very light straw colour; nor does the colour of the latter approach any nearer that of the former by further keeping. From this it would appear that the principal effect is produced by the wax in the simple ointment.

We are occasionally called on for ointments or plasters of narcotic plants at seasons of the year when we are unable to prepare or obtain them prepared according to any officinal formula; on such occasions, if a good extract of the plant can be procured, we may make a very good article by rubbing a proper quantity of soft extract on a slab with either simple cerate or ointment, or else with adhesive plaster, previously softened by *heat.*

The mercurial ointment, by standing, separates into two parts, one of which is quite soft, while the other becomes so hard that we are unable to reduce the lumps it forms by means of a palette knife, at ordinary temperatures; it may, however, be rendered smooth by slightly warming it, and rubbing down the lumps while soft, taking care at the same time not to injure the ointment by the application of too great a heat.

Liniments.—Those prepared extemporaneously, are made in the same manner as mixtures.

Medicated Waters.—There are several of these occasionally called for, which, from the small demand for them, are not kept prepared in the shops; it is thus with the waters of pennyroyal, fennel, aniseed, and some others; any of these may be prepared in a short time, in the manner directed in the pharmacopœia for cinnamon water. But when medicated waters, prepared in this manner, are to be used for dissolving any of the salts of the vegetable alkalies, it is necessary to

add a small quantity of acid, in order to neutralize any magnesia that may be in solution.

Tinctures.—The only tinctures we prepare extemporaneously, are those of iodine and kino; both of which are altered by standing, in a short time. It is necessary first to rub the iodine with a few drops of alcohol in order to powder it, and when this is completely done, we may add the remainder of the liquid. Most kino dissolves best in water, and in preparing the tincture the solution may be hastened, by first rubbing the kino with the water necessary for making the proper quantity of proof spirit, and afterwards adding the alcohol to the watery solution, while still on the undissolved part of the kino.

ART. XXII.—*Pharmaceutical Notices.—No* 8.

Citric Acid.—The tests generally indicated by chemical authorities for detecting the imposition which is occasionally practiced, in substituting tartaric for citric acid; are, the forms of the crystals and the exhibition of potassa and several of its salts. The former is often a bad criterion, inasmuch as the falsifiers take good care to pick out and mutilate the crystals of tartaric acid, so as to give them some resemblance to those of citric acid. The second method, although unexceptionable when properly practiced, requires, however, a certain management which I have not seen explicitly pointed out in any chemical work. The rationale of this test is founded upon the peculiar tendency of tartaric acid to form, with potassa or several of its salts, a double salt of potassa, (cream of tartar,) which is almost insoluble. This property is not possessed by citric acid, even added in great excess to the alkaline solution.

No more, as far as I know, has been said respecting this distinction; and it might be inferred by some, that any mixture of tartaric acid and potassa or some of its salts, will yield a precipitate of bi-tartrate of potassa. This, however, happens only when tartaric acid is added in excess; other-

wise, a simple tartrate is produced, which is exceedingly soluble. This test will generally succeed, whenever the alkaline solution is poured gradually into the acid solution; for under these circumstances, the potassa is at once over saturated. But should the inverse take place, no precipitation occurs, until an excess of acid be poured in. This may be illustrated by gradually dropping into an alkaline solution, coloured by litmus, a solution of tartaric acid, until the blue colour changes to a light pink. As there is as yet but the quantity of alkali requisite to form a simple tartrate, of course no precipitation takes place; but so soon as more acid is added, cream of tartar begins to precipitate.

These remarks were elicited by the following circumstances, well deserving the attention of the pharmaceutist:—Since the publication of Mr. J. Scattergood's remarks on the neutral mixture, prescriptions for that draught, compounded directly from the citrate of potassa, have, for the first time, probably, made their appearance in our pharmaceutical establishments. As I was destitute of this salt, I undertook to prepare some from a lot of pretended pure citric acid, received not long ago from a most respectable source; but on testing it, it was found to be nothing but tartaric acid. On five samples I procured afterwards from different stores, only two were citric acid;* the three others were the same imposition, and with none of the five samples did the exhibition of chloride of barium indicate the presence of sulphuric acid.

The samples of citric acid were generally in larger crystals, many of them in regular rhomboidal prisms, distinguishable at once from the longer hexædral prisms of tartaric acid. The samples of the latter were in fragments, among which many exhibited the hexædral form, and the angles had apparently been smoothed by the process of rotation. E. D.

Physick's Issue Ointment.—Dr. Physick, of this city, is in the habit of using a preparation for the purpose of keeping

* I think both samples came from the same source; one I obtained myself from the chemical manufactory of Messrs. Elliot, of this city.

issues open, which is known by the name of Dr. Physick's Issue Ointment. It is made by boiling half an ounce of powdered cantharides in two ounces of rose water, and evaporating till one half of the fluid is driven off, having previously added fifteen grains of tartar emetic. The decoction is to be strained, and three ounces of olive oil, one and a half ounces of white wax, and one ounce of spermaceti added to it, and the mixture then boiled till all the water is evaporated. This preparation, when properly made, forms a light coloured cerate, and in many cases is admirably suited for the purposes for which it is designed; but has the disadvantage of not possessing an uniformity of strength, owing in all probability to the difference of temperature at which it was made.

I cannot discover what benefit can arise from the addition of the tartar emetic, the quantity ordered is so small that it can scarcely exert much influence; added to which, from the manner in which it is mixed with the other ingredients, the salt is probably decomposed either wholly or in part.

E. Hopper.

Benzoin, and Benzoic Acid.—It is stated that the white tears, and the brown connecting medium of gum benzoin, contain about the same proportion of benzoic acid. From some experiments, I did not find this to be the case, having obtained but 8½ per cent. of impure acid from the white tears, whilst the brown portion yielded me 13 per cent. It should, however, be observed that the brown portion on which I operated was of a clear transparent appearance, with a smooth clear fracture.

Benzoic acid may be extracted from tolu, and some other of the balsams, by simply boiling them in water, which dissolves the acid, and precipitates it on cooling. In this way I procured 9 per cent. from tolu; 5 from styrax, and 4½ from balsam Peru. I found it impossible to sublime it from these balsams, free from oil, as this latter was volatilized at about the same temperature as the acid. *S. W. Brown.*

ART. XXIII.—*On Daturia.* By Samuel Simes.

(*Extracted from Inaugural Thesis.*)

In the winter of 1831, being induced to take up this subject, I repeated the process laid down by Mr. Brandes, with little or no success; I then tried the following, based upon his.

I obtained a strong alcoholic decoction of the seeds, added while hot, magnesia, filtered, and submitted the precipitate to the action of boiling alcohol f.* filtered, and removed the colouring matter by the agency of animal charcoal; evaporated and set aside, there was deposited considerable oil and resinous matter, together with white semitransparent crystals, which have an acrid taste, not perceptible at first, on account of their slight solubility. I repeated this process several times, with similar results. In the process of Brandes, the colouring matter probably prevented the regular crystallization. Not having contemplated writing on this plant, prior to the time for collecting the seeds, and not being able to obtain any on which reliance could be placed, my exertions for the present were suspended; but the succeeding fall, having collected a fresh supply, my efforts were resumed. I was left to my own discretion in relation to the quantities, strength, and other particulars necessary to be observed in the extraction of this alkaloid principle. After varying the processes in numerous ways: as, employing the seeds in their whole state, in a coarse, and in a fine powder; making the decoction strong and weak; with alcohol, alcohol f., and with water; adding the magnesia to the decoction while it was hot, and when it became cold; letting the action of the magnesia on the decoction be of long and short duration; submitting the precipitate to the action of boiling alcohol and boiling alcohol f.; evaporating the filtered solution, without treating it with animal charcoal, and treating it with it; and lastly, evaporating the filtered solution spontaneously—slowly—and expeditiously.

* When the term alcohol is employed, it will be understood that it is of the specific gravity 8.483+, and when alcohol f. that the specific gravity is .818+ in relation to weights, troy has always been used.

After observing particularly the results of all these different modes of treating the seed, a few of which will be related, I have come to the conclusion that the following is the most approved. I took one pound of finely powdered stramonium seeds, boiled them for one hour in three pints of alcohol, filtered, and while hot, added 3iv. of magnesia, set it aside for twenty-four hours, with occasional agitation, collected the precipitate, and boiled it for a few minutes in f. ℥xii. of alcohol f., filtered and treated the solution with animal charcoal; after filtering, a colourless transparent liquid was obtained; (I tasted a small quantity of it, which produced nausea and headache,) on evaporating this to one half, I set it by; the next day I found deposited on the bottom of the evaporating dish, innumerable small globules of oil, and the sides of the dish were covered with small white crystals; as the evaporation proceeded spontaneously, more crystals were successively deposited, leaving as a residue in the bottom of the dish, oil and resinous matter. *Rationale.*—The daturia (according to Brandes,) exists in the seeds in the state of a malate, the alcohol attracts it, and on adding magnesia to the decoction the malate is decomposed, the acid unites with the magnesia, and forms malate of magnesia, which remains in solution; the daturia which is set free precipitates along with the excess of magnesia; by treating this precipitate with boiling alcohol f. the magnesia is left, and the daturia is taken up, together with a portion of colouring matter, this being removed by the agency of animal charcoal, and the solution on cooling deposits the daturia, it being only slightly soluble in cold alcohol. By the assistance of a powerful magnifier, the crystals were found to be regular oblong quadrangular prisms, very like the crystals of Epsom salts.

Experiment No. 1. I boiled ℥viij. powdered stramonium seeds in one pint of alcohol, for one hour, filtered, and while hot added ʒij. magnesia, let it stand for eighteen hours, filtered, and boiled the precipitate in f. ℥vi. of alcohol f., filtered and evaporated one-third, then set aside for deposition.

No. 2. I repeated No. 1, except that the magnesia was added to the decoction when it became cold. No. 3, I repeated No. 1,

with the addition of submitting the alcoholic f. solution to the action of animal charcoal. No. 4. I repeated No. 3, with the alteration of adding the magnesia to the decoction after it had become cold. In the deposition of Nos. 1 and 2, there was no perceptible difference, oil, resin, and a reddish granular substance, in small quantity, being the products. Nos. 3 and 4, crystals were precipitated, possessing all the properties of those formerly described; the deposition of Nos. 3 and 4 differing in themselves by more crystals being formed from No. 3. By comparison of the four preceding experiments and results, it appears the magnesia should be added to the decoctions while hot, this means resulting in the more complete decomposition of the salt than otherwise would have taken place, and the charcoal, in removing the colouring matter, conduces to the regular formation of the crystals.

I added to an aqueous decoction of the seeds, water of ammonia, of the specific gravity .960, which threw down a crystalline precipitate; on dissolving this in boiling alcohol f. and subjecting it to the action of animal charcoal, filtering, and evaporating, crystals were deposited, possessing all the properties of those obtained by the employment of alcohol; their quantity was comparatively small.

To ℥iij. of powdered stramonium seed, I added two pints of dilute sulphuric acid, and boiled for one hour, the menstruum extracted a large quantity of mucilage, which made it very difficult to filter; on adding to the filtered liquor f. ℥ij. of water of ammonia, a dark, almost black, coloured precipitate was thrown down; collected this precipitate, and boiled it in f. ℥viij. of alcohol¦ f.; filtered, and treated the solution with animal charcoal, evaporated one-third; nothing satisfactory was produced upon standing. I repeated the preceding experiment, with the alteration of maceration for a week, instead of boiling for an hour; there was nothing satisfactory in the deposition. A serious objection arises from employing water as a menstruum, and more particularly when an acid is added, the water extracting the mucilaginous matter, and the acid and heat coagulating the albumen, render the decoction so thick that it is almost impossible to filter it.

The large quantity of fixed oil which the stramonium seed contain, was very annoying in all my experiments. To get rid of this, I flattered myself it could be removed by the menstruum, employed for the same purpose, in the extraction of the Emetia from the root of the *Cephælis ipecacuanha.*

I macerated ℥iv. powdered stramonium seed in f. ℥x. of sulphuric ether of the specific gravity .748, for a week, with occasional agitation; the ether, when filtered from the seeds, was of a pea green colour; on spontaneous evaporation, it left three different substances; first, 325 grains of a transparent light pea green coloured oil, which has a nauseous taste, and etherial odour, of the specific gravity .9666+, insoluble in water and cold alcohol; soluble in boiling alcohol and ether; inflammable, burning with a white flame, and forming with the fixed alkalies, saponaceous compounds. This oil, upon standing, sometimes deposits a white pearly crystalline substance; secondly, 60 grains of a reddish yellow coloured fluid, of the specific gravity .99, soluble in hot and cold alcohol and ether, diffusing itself through water, causing a milky appearance; on spontaneous evaporation, it leaves oil, and a red resinous matter, exactly resembling that which is left after the evaporation of the mother water, from which daturia has been deposited; thirdly, crystals were also precipitated, but being mixed with such a large quantity of oil, I could not determine their properties. I treated the seeds, on which the ether had exhausted its solvent powers, by the mode for obtaining daturia, but not the slightest trace of it was to be seen; it may be inferred from this that daturia, in the state in which it exists in the seeds, is soluble in ether. I repeated these experiments with ether, with the same results.

Daturia is a white semitransparent crystallizable substance, the form of its crystals being an oblong quadrangular prism; its taste is slightly bitter and acrid. It is insoluble in cold water, cold alcohol, and ether; partially soluble in boiling water, and very soluble in boiling alcohol; the strong acids have little effect on it, with the exception of the sulphuric, which carbonizes it. Daturia unites with the acids, and forms soluble white crystallizable salts. The sulphate crystallizes

in needles; the muriate, in groups, each group consisting of a number of small linear crystals, radiating from a central point; their outer extremities terminating in such a manner as to form an irregular oblong square; the nitrate, in acicular crystals; the tartrate, was of a granular appearance.

The proximate constituents of stramonium seeds not (to my knowledge) having been mentioned by any writer, the following are offered as the results of experiment: a salt of an alkaloid principle, discovered by Mr. Brandes; fixed oil, insoluble in water and cold alcohol, soluble in boiling alcohol and ether; red resinous matter, soluble in alcohol and ether; green colouring matter, nearly insoluble in cold water, cold alcohol, and boiling fats, more soluble in ether, and very soluble in boiling water, and boiling alcohol; a yellow reddish colouring matter, soluble in water, alcohol and boiling fats; gum and albumen. It has not been decided with certainty to which of these principles, (or any others which may have been found existing in this plant,) stramonium owes its virtues. Dr. Bigelow considers the virtues of stramonium to reside in an extractive principle, soluble in water and alcohol, and precipitated from its infusion by muriate of tin and sulphate of iron. Mr. Brandes considers daturia to be the active principle; for, says he, I was always affected with headache and dyspnœa, after tasting its salts. To this I can add my testimony, as producing the first effect in a very violent degree. This principle has never been employed in medicine.

I gave four grains of the muriate of daturia, dissolved in boiling water, and mixed with milk, to a small cat: it produced nausea, with a desire to vomit, together with great restlessness and contractions of the muscles of the legs and neck. It was given to it at ten o'clock at night: the following morning life was extinct.

Promnitz, on analyzing the leaves, found them to contain gummy extractive, extractive, fœcula, albumen, resin, and various salts. His analysis of the whole plant agrees with that of the leaves, with the addition of a large quantity of lignine. According to Dr. Thompson, carbonate of ammonia is one of its proximate constituents.

I treated the green leaves by the same process as the seeds, for obtaining daturia, without resulting in any thing conclusive; a slightly greenish coloured matter, soluble in boiling alcohol and water, being deposited. The leaves when dry were submitted to the usual process for obtaining daturia; a crystalline precipitate was thrown down, but in so extremely small quantity, that I could not determine its properties.

The period for gathering the leaves, is from the middle of August to the first of September; this being the time, before a small insect preys upon them, and the frost injures them. They should be dried carefully, and kept in close vessels, from the action of the air and light, as the latter deprives them of a portion of their colour, and probably of some of their virtues, as it does many other similar leaves.

Professor Bigelow informs us, that when the leaves are intended to be given in substance, they should be powdered as soon as dry, and kept in close stopped bottles.

The dry leaves are quite an energetic errhine, the effects of which I experienced in a sensible degree, together with headache in powdering some.

One pound of the green fresh leaves weighed, when dry, two ounces and two hundred and sixty four grains.

The stramonium seeds should be gathered as soon as ripe, and prior to the fall rains and frosts, which exercise an injurious effect on them. One pound of the recently gathered semina, lose by drying ℥i and 270 grains.

From the results of administration and analysis, it may be laid down as unequivocal, that the seeds of stramonium contain the virtues, in a more concentrated and uniform degree, than any other part of the plant. All those practitioners who have employed the seeds, or any of its preparations, consider them to be much superior, as medicines on which they can depend, for uniformity of strength and operation.

Dr. Marcet considers the extract, as prepared from the seeds by Mr. Hudson, to be much more certain in its effects, so much so, that one part is equal in power to two of that prepared from the leaves. The seeds before and after collection, are not so liable to become injured. This also renders them pre-

ferable. Many other arguments might be brought forward to prove the superiority of the seeds over any other part of the plant, but it is not necessary. I think these are sufficiently conclusive, and my opinion is, that the revisors of our National Pharmacopœia would add much to the efficacy of its ointment and extract, by substituting the seeds in lieu of the leaves employed in those preparations.

I prepared some extract according to the recipe of Mr. Hudson;* one pound of the seeds produced nine drachms and two scruples, of a dull, black, crumbly extract, with a bitter, slightly sweetish, and extremely nauseous taste, and a peculiar herbaceous and strong narcotic odour.

The seeds and leaves are not unfrequently administered in substance. Dr. Archer considers the seeds the best form of administration, others prefer the leaves.

In domestic practice, the leaves moistened or steeped in vinegar, are of considerable repute, as a sedative application in local pains; and also the decoction in lotions and fomentations.

By American surgeons, poultices made from stramonium are preferred even to belladona, to dilate the pupil before operating for cataract.

* For recipe see Coxe's Dispensatory, pages 287 and 288, of ninth edition.

ART. XXIV.—*On the Chlorides of Oxides.* By E. Durand.

(*In reply to Art.* VII., *Vol.* V.)

Mr. Cohen, in his remarks upon the compilation which I published three years ago, in the first volume of this Journal, has pointed out but one error—"a misstatement of names;" This I was unaware of, until I saw his communication; for, as has already been mentioned in a former article, I had not referred to the paper from the time the manuscript was handed to the editor.

I had hoped that this candid acknowledgment would have satisfied Mr. Cohen; but it appears that this gentleman requires still greater concessions. But I cannot admit that those parts of my compilation which he has quoted as errors, are so, on his mere dictum. Let him produce experiments in support of his opinions, and facts invalidating the theories, universally received, and yet taught by the leading writers on chemistry; and I will cheerfully admit that I have been in error. But, whilst he is unsupported by such proofs, I must be permitted to adhere to the views which I have advocated. Hitherto, I am conscious that this controversy has been attended with no beneficial results, and shall therefore close it on my part, with a few observations on the reply of Mr. Cohen.

That gentleman endeavours to prove that the most concentrated solution of chloride of lime contains less chlorine than Labarraque's liquid; but he fails completely in his undertaking. First, I have made no allusion whatever to Faraday's amended solution of Labarraque, which solution, whatever Mr. Cohen may say to the contrary, is about one-half stronger than the original liquid. In the second place, the maximum concentration of a solution of chloride of lime, is not limited to one part of this salt to twelve of water; it may be made double, treble, and quadruple. Thirdly, Labarraque, as well as Faraday, washes his chlorine, by which process one-third of the gas is absorbed. If Mr. Cohen will again

make his calculations, he will find that Labarraque's solution contains only 1.84 per cent. of chlorine, equal to a solution of one part of chloride of lime in twelve of water; and that of Faraday 3.16. Hence, as my intention was merely to prove that a solution of common bleaching salt, which may be obtained for a trifle, would at least be equal to the expensive preparation of Labarraque; I think that I have carried this point. The experience that has been acquired during the prevalence of the cholera, has perfectly justified my assertions.

In mentioning the identity of Labarraque's and Payen's solutions, I could not imagine that Mr. Cohen would take it in the broad acceptation of the term. Indeed, he well knew that I am not so ignorant of the laws of chemistry, as to admit their strict identity of composition. The identity which is established by almost all the writers upon chemistry, and for which I am still contending, is that relating to the quantity of chlorine in either solution; to their action as disinfectors, and bleaching agents, to permanency &c. In these solutions, whether chlorine is combined with the carbonate of soda, or whether this salt is transformed into a chloride and a bicarbonate of that base, or whether (this opinion is now prevailing) a new salt, *chlorite of soda*, is produced, are still very doubtful. But whatever the combination may be, it is incontrovertibly true, that the presence of carbonate of soda in the liquid prevents the decomposition which might otherwise take place, after a certain length of time. Mr. Cohen, instead of ascertaining this fact by actual experiment, prefers denying it at once, and adduces with emphasis, and for the second time, this pompous sentence, "Payen has his chlorine combined with caustic soda, which, *in consequence of changes well known to chemists*, becomes a carbonate [he means a chlorate] of soda, and a chloride of sodium." Chemists say no such thing with respect to Payen's chloride. Besides, a chlorate is not generally formed by transmitting chlorine through an alkaline solution, unless this solution be highly concentrated, (about 32° of Baumé's areometer for salts,) or the chlorine be added in great excess. After a lapse of time, or when heat is applied to a pure chloridic solution, there may

be a formation of a chlorate; but with the impure solutions of Labarraque and Payen, or with other similar ones containing an excess of carbonate of the same base, and not highly saturated, this reaction does not take place. In other respects, the smell and taste of these impure solutions of soda, are very similar; when heated, both evolve but little chlorine; the dry mass afforded by evaporation, when redissolved, retains the odour, taste, and even bleaching power of the liquid which yielded it, and the ultimate results have the greatest analogy to each other.

If Mr. Cohen has not taken the trouble of ascertaining the truth of his assertions, it has not been the same on my part in establishing their fallacy. Among other experiments, I have tried the comparative strength of two different chloridic solutions, one prepared by Mr. Cohen himself according to Labarraque's process, and obtained on the 22d of November last at the store of Mr. S. P. Griffitts, jr. The other was from my own manufactory, made by Payen's process, in June last. Both bottles were in pretty good condition. The first experiments were made on the 23d of November, in presence of my two assistants, with Welters and Marozean's chlorometer; the others have been made to-day, (10th of May,) with the remainder of the same liquids, by the method recommended by Henry and Plisson. I have not found that Payen's liquid after the lapse of nearly one year, has undergone the prompt decomposition that it ought to do, according to the assertion of Mr. Cohen, *in consequence of changes well known to chemists.* I can say on the contrary, that all the advantages were on the side of the latter liquid. From this unexpected circumstance I will not draw the conclusion that Payen's chloride is preferable to Labarraque's; but only that I have, by chance, obtained a solution which had not been combined with the full proportion of chlorine with which it was intended to be united. This fact is of sufficient interest to fix the attention of the authors of our Pharmacopœia, and induce them to repeat my experiments, with a view, if they are found correct, to recommend the best formula; as equality

of products, with improvement in the process, give it a decided advantage.

Such are the evidences of that identity which I advocate, and it is admitted by Berzelius, Dumas, Turner, and the able authors of the New American Dispensatory.

In the sixth paragraph of his reply, Mr. Cohen at last admits the theory of Gaultier de Claubry, with this restriction, however, that carbonic acid is not the sole atmospheric agent capable of decomposing a chloridic solution, and that to the "*ammonia, its elements and compounds,*" which always exist in a vitiated atmosphere, must be ascribed the complete decomposition of these substances. I must be permitted to doubt the accuracy of these assertions, and were it not my decided intention to give up this controversy, unless supported on the part of my adversary by actual experiments, I would ask Mr. Cohen whether he, or other chemists, have ascertained analytically, that such reaction takes place. I rather think, (and this theory is generally admitted) that ammonia, one of its elements, *hydrogen*, several of the compounds of this latter gas, and a few of those of ammonia, are acted upon by free chlorine as it is disengaged from the solutions of the chlorides of oxides by another agency. As to the action Mr. Cohen pretends that nitrogen, the other element of ammonia, has upon a chloridic solution, this is truly a discovery for which chemists will be highly indebted to Mr. Cohen, if he has the good fortune of supporting it by some few facts. Besides, ammonia and its compounds do not always exist in a vitiated atmosphere.

Finally, in recommending the employment of sulphate of of indigo, in testing the strength of an impure chloride, I acknowledged its defects; but I was of opinion that with these imperfections, it was better calculated for these species of solutions than Morins and Marozean's chlorometers. As Mr. Cohen, in his first paper, mentioned only the authority of this latter gentleman, I think he was not then better acquainted than myself with Henry and Plisson's chlorometer, otherwise he would have quoted the improved method of these last chemists. Their chlorom-

eter is undoubtedly preferable to former ones; it is founded upon the property that chlorine in its free state, or combined with an oxide, possesses of reacting, with the assistance of heat, upon ammonia, or several of its salts, in such a way as to evolve a volume of nitrogen corresponding to the proportion of chlorine contained in a chloridic solution; by means of which, this proportion may easily be ascertained by calculation. See *Journal de Pharmacie*, October, 1831.

SELECTED ARTICLES.

ART. XXV.—*Observations on the Apocynum Cannabinum.* By John H. Griscom, M. D. New York.

(Extract.)

Botanical History.—The term Apocynum is derived from the Greek Αποκυνον, (Diosc.) ἀπὸ, and κυνὸς, because it was supposed to kill dogs. The Egyptians call this plant *ossar*, whence comes the name of the fruit bidessar, q. d. *Bordes ossar*, which in Arabic signifies the egg ossar, the pods of the great Assyrian sort being shaped like an egg.*

Of the Genus *Apocynum*, there are reckoned by botanists seventeen species,† of which the *cannabinum* is the second in order. It belongs to the *Fifth* class, Pentandria, order *second*, Dygynia of Linnæus, and to the Natural order, *Contortæ Apocynæ* of Jussieu.

Synonyms.—Indian hemp—Dog's bane. It is most commonly known in this country by the name of Indian hemp.

Gen. Char.—*Calyx. Perianth* one-leafed; five parted, acute, short, permanent.—*Corolla.* Monopetalous, bell-shaped, semi-quinquifid, divisions revolute. *Nectary*, of five glandular, oval corpuscules, surrounding the germ. *Stamina. Filaments* very short. *Anthers* oblong, erect, acute, bifid at the base, converging.—*Pistils, Germs* two, ovate. *Styles* short. *Stigma*, roundish, bifid at the tip, muricate, glued to the anthers.—*Pericarp. Follicles* two, long, acuminate, one-valved, one-celled.—*Seeds.* Numerous, very small, crowned with a long down. *Receptacle*, subulate, very long, rough, free.

Sp. Char.—*Corolla.* Bell-shaped. *Nectaries*, five, alternate with the stamens. *Stem* straightish, herbaceous, leaves oblong, cymes lateral, longer than the leaf.

* Miller's "Gardeners Dictionary."

† We have only *three* species of Apocynum, according to Nuttall and Eaton.

The foregoing characters, taken from MILLER, do not appear to coincide entirely with those given by other botanists. There seems to have been some doubt among them as to which plant the name *cannabinum* should strictly be attached, and by the quotations from the authorities made below, it is sufficiently proved that there are several *varieties* of this *species*, and the *A. pubescens** described by R. BROWN, appears to be one of these varieties; its character is therefore subjoined to the others. There is not, however, any probability that there is much, (if any,) difference in their medicinal virtues, therefore as no description yet given will apply to all the *varieties*, and as any plant which will agree with any of these descriptions, may be safely taken for *Apocynum cannabinum*, practitioners in different parts of the United States, or elsewhere, who may wish to use this medicine, may be saved from inconvenience and expense.

APOCYNUM.—*Calyx* very small, 5-cleft. Corolla campanulate; border with 5 short, spreading, or revolute lobes. *Anthers* sagittate, connivent, cohering to the stigma by the middle. *Glandular teeth* 5, acute, alternating with the stamens, and opposite the segments of the corolla. *Styles* obsolete. *Stigma* dilated, and conical at the apex. *Follicles* 2, long, linear. *Seeds* comose.†

A. cannabinum. Leaves lanceolate, acute at each end, glabrous; cymes paniculate; calyx as long as the tube of the corolla. OBSERVATION. Stem herbaceous, 2 or 3 feet high. Cymes lateral, longer than the leaf. Flowers greenish-white.

A. pubescens. Leaves ovate-oblong, mucronate, obtuse at the base—on both sides, and with the shorter cyme, pubescent; calyx nearly as long as the corolla. OBSERVATION. Stem

* Professor Eaton says, "Brown seems to have forced in an additional species, not found in nature."

† The generic character here copied, is taken from Torrey's Flora, "which being one of the *latest* publications, is more likely to be correct. The discoveries of new species, and the establishment of new genera, nearly allied to *Apocynum*, may from time to time, cause slight alterations in its character, according as new species are added, or old species are separated into other genera."—*(Letter from his highly esteemed friend, D. Thomas, to the author.)*

herbaceous, 2 or 3 feet high. Leaves almost tomentose on the under surface. Cymes terminal. Flowers greenish.

Elliott's Sketches.

A. cannabinum. Leaves oblong-oval, with hoary pubescence underneath; panicle pubescent; the limb of the corolla erect. Observation. Leaves and flowers greenish white, or yellowish-green.—*Barton's Compendium Floræ Philadelphicæ.*

A. cannabinum. Leaves oblong-oval, acute at each end; cymes paniculate; limb of the corolla erect. Observation. There is some variety in the leaves of my specimens; some being oblong-oval, and others lanceolate and tapering at base; or possibly I may have blended the two species *A. cannabinum*, and *A. pubescens.*—But if they are really distinct, they closely resemble each other in habit.—The *pubescence* is but slight in any of those which I possess.—*Darlington's Florula Cestrica.*

A. cannabinum. Stem upright, herbaceous. Leaves oblong, tomentose beneath; cymes lateral, longer than the leaves.—*Loudon's Encyclopedia of Plants.*

A. cannabinum. Leaves lanceolate, acute at each end, smooth on both sides; cymes paniculate; calyx as long as the tube of the corolla. Observation. *Stem* erect, slender, branched, purple, a little glaucous. *Leaves* 2 or 3 inches long, and three-fourths of an inch broad, on short petioles, attenuate at the base, very smooth. *Cymes* many flowered, paniculate, smooth, segments of the *calyx*, subulate, about as long as the tube of the corolla. *Corolla* small, campanulate, green; border erect. *Follicles* long, very slender.

A. pubescens. Stem erect; leaves ovate, hoary pubescent beneath; cymes pubescent; corolla longer than the calyx; border erect. Observation. Stem 2 to 3 feet high, with a few erect branches. *Leaves* on short villous petioles, obtuse, but not cordate at the base, mucronate, more or less pubescent beneath. *Cymes* short. *Flowers* few, (small.) Segments of the *calyx* lanceolate. *Corolla* greenish-white.—*Torrey's Flora.*

A. cannabinum. Stem erect and branching; leaves oblong-oval, hoary beneath, and downy when young, (more or less

glabrous in maturity;) cymes lateral and terminal; pubescent when young, (more or less glabrous in maturity;) tube of the corolla about equal to the calyx, with an erect limb.—*Eaton's Manual.*

Apocynum cannabinum is easily distinguished from *A. androsæmifolium* by the much larger flower of the latter; and from *A. hypericifolium* by the somewhat procumbent stem of the last, and by its having "very much the aspect of hypericum."—Vide *Barton's Compend. Flor. Philadel.*

Description.—The roots of this plant are perennial, and creeping, the stems are brown, and about two feet high, the leaves smooth, in pairs; it abounds in a milky juice. Towards the upper part of the stem the flowers come out from the wings of the leaves in small bunches; they are of an herbaceous white colour, and being small, make no great appearance. This therefore is seldom admitted into gardens except for the sake of variety.* It flowers from July to September, and is a native of Virginia and Canada. It is propagated by parting the roots in March, before they put out new stems. It is hardy enough to thrive in the open ground, but the soil should be light and dry, otherwise the roots are apt to rot in winter. This sort spreads so much by its creeping roots as to be troublesome in gardens. The stems decay to the root in autumn, seldom ripening their seeds.† The bark of the stem when dry is very fibrous, and may be peeled off in strings, which are very tough and strong. The Indians of North America prepare the stalks of this species as we do hemp, and make twine, bags, fishing nets, and lines, and linen for their own wear.‡ It was cultivated by the Dutchess of Beaufort in 1699. One species of this plant, the *A. juventas*, renovating dog's bane, is esteemed by the Chinese for possessing similar properties to those of the ginseng.§

The root of the species under consideration, which is the only part of the plant employed in medicine, belongs to the class Radix repens, and is frequently very tortuous. It con-

* The *androsæmifolium*, whose flower is larger, and of a purple colour, is more cultivated for appearance.

† Miller's Gard. Dict. London, 1798. ‡ Vide Kalm. § Rees' Cyclop.

sists of two distinct portions, the main body of the root covered with a bark. The ligneous portion is of a yellowish-white colour, possessing considerable bitter taste, and some odour. The cortical part is of a brown colour, and rough externally, white, and smooth within. Its taste is extremely bitter, rather nauseous, and somewhat similar to that of the *Sanguinaria canadensis.* Odour strong, and unpleasant.

The chemical investigation of this root has been pretty fully entered into, in order to ascertain its proximate principles. With this view numerous experiments were instituted, more than it would be advisable to embody here. In some instances the results obtained by the use of reagents, were somewhat doubtful as to their nature; in such cases I have drawn the most correct conclusions I was able, considering the limited state of our knowledge in this department of chemistry.

Experiment 1*st.*—Two hundred grains of the dried root were boiled one hour, in eight ounces of water till reduced to six and a half ounces. The decoction was of a bright brownish-red colour, having a strong and somewhat nauseous odour, and a very bitter taste, resembling very much those of the dry root. The addition of a few drops of a solution of sul. ferri. to a portion of it, changed its colour to a dark green. The primitive colour was restored by sulph. acid. A portion of the decoction was treated with the acet. plumb. in solution, which caused the immediate precipitation of a light brown, flocculent matter, in considerable quantity, leaving the supernatant liquor perfectly clear and transparent.

Experiment 2*d.*—One drachm of the fresh dried root was subjected to the action of three ounces of alcohol, also one drachm to three ounces of water. The tincture was of a very light brown colour, and possessed very little bitterness. The infusion was much darker and much more bitter.

Experiment 3*d.*—The addition of water to the tincture rendered it of a turbid, opaque whiteness, destroying its original colour. Sol. sulph. ferri. caused a light green colour. When added to the infusion it became of a turbid green colour.

Experiment 4*th.*—Forty grains of the ligneous part of the

root were macerated in two ounces of water for forty-two hours; the infusion was slightly tinged with yellow, apparently containing a good deal of mucilage. An equal quantity of the cortical part of the root was treated with the same quantity of water for the same length of time. This was of a bright brownish-red colour, similar to Madeira wine. On the *first* sulph. ferri. had but a partial effect, causing a very slight tinge of green. Acet. plumb. had only a slight effect; it threw down a little precipitate. On the *second*, sulph. ferri. had a decided effect, causing a dark green precipitate as in the former experiments. Acet. plumb. precipitated the same dark brown substance before noticed, in considerable quantity, leaving the liquor clear and transparent. From the latter, a white caseous precipitate was separated by the aqueous solution of gallic acid. A solution of carb. pot. had no effect on either infusion. The precipitate of the second from the sulph. iron. being filtered off, the remaining liquor was changed to a beautiful violet colour by the gallic acid.

Experiment 5th.—Eighty grains of the dried root were macerated in two ounces of water forty-eight hours, and the infusion evaporated to dryness. The residue was of a fine brown colour, and of a tenacious consistence.

Experiment 6th.—Two hundred grains of the dried root were put into ℥xij. of distilled water; immediately after the immersion, the transparency of the fluid was lost, and it assumed a dull cloudy appearance, probably owing to the abundance of mucilage contained in the plant. At the end of twenty-four hours the liquor was of a clear amber colour, transparent. Neither the tinct. gallæ, tinct. iodine, oxal. ammon. or mur. barytes, had any effect on it. Eight ounces of the fluid were evaporated at steam heat. The residue was of a reddish-brown colour, thick in consistence, gummy. It could not be dried at this heat. Its taste was bitter, though differing somewhat from the solution before evaporation.

Experiment 7th.—The residual matter of the preceding experiment, was treated with distilled water; all the brown part was immediately dissolved, but a white scaly substance in

considerable quantity remained undissolved. This was soluble in alcohol.

Experiment 8th.—The root remaining from the sixth experiment was then treated with alcohol. The addition of water to a portion of it caused a precipitate in the form of a white cloud. The rest of the tincture was evaporated, and a white substance was left which was insoluble in water.

Experiment 9th.—Twelve ounces of boiling water were poured upon two hundred grains of the sliced root. The water immediately became cloudy, soon assumed a yellowish tint, and at the end of twenty-four hours was of a clear amber colour. At this time, at the bottom of the liquid, resting on the root, was observed a layer of a substance of a white woolly appearance, doubtless the mucilage of the plant, which was dissolved by the hot water, and precipitated when cold. Sulph. ferri. produced a slight green tinge, and acet. plumb. its before mentioned precipitate.

Experiment 10th.—When the aqueous infusion was treated with a solution of nitrate of mercury, a dirty white precipitate was formed, leaving the liquor above limpid, which in twenty-four hours, had assumed a purple colour. A solution of chlorine being added, this colour was destroyed, and a white precipitate thrown down. Lime water added to a part of this caused a yellow colour, which immediately changed to black. When the precipitate was washed with water, before adding the lime water, no yellowness was produced.

Experiment 11th.—One hundred and fifty grains of the dried root were macerated in successive portions of alcohol, until all the matter soluble in this menstruum without heat was taken up. The remainder of the root was then dried, and was found to have lost from forty to fifty grains, equal to about twenty-nine per cent. The alcoholic solution was of a bright yellow colour, possessing much bitterness.

Experiment 12th.—This was distilled in a glass alembic until two-thirds had gone over. The remaining fluid was then of a rather deeper yellow, intensely bitter, and containing a yellow, powdery looking substance in small quantity. This concentrated tincture was then placed over steam in a

glass vessel, and evaporated nearly to dryness. Soon after the evaporation had commenced, there began to form a thick viscid substance of a yellowish-brown colour, and a bitter taste, sufficiently acrid to blister the tongue in a few seconds. This substance appeared in considerable quantity. There was also observed a greasy looking substance, floating on the fluid, not so abundant as the preceding, but evidently differing from it.

Experiment 13*th.*—Five hundred grains of the root were covered with alcohol and allowed to macerate; which operation was repeated four successive times. The last time very little colour or taste was perceptible in the tincture. The united tinctures were distilled until about two-thirds had passed over, (a small portion being retained, which was changed to a milky whiteness when diluted with water, depositing in a few hours a white powdery precipitate.)

Experiment 14*th.*—The residuum in the alembic was placed over a steam bath, and about one-third evaporated, and then cooled. The edge of the fluid at the dish was covered with a *white, greasy looking substance*, very much resembling *tallow*, which extended in a thin coating up the sides of the glass. The bottom of the dish was also copiously dotted with a substance of apparently similar nature, but formed in distinct and separate globules, about the size of a large pin's head. They were entirely loose upon the glass, and a few of them uniting, *floated* on the liquor. The fluid was drawn off into another vessel, and this adipose substance left over the bath to dry, but as the globules soon began to assume a yellow colour from the heat, they were removed and allowed to dry spontaneously.

Experiment 15*th.*—The tincture was further evaporated, and when about one-half of it had disappeared, and the rest cooled, a considerable number of the brown, greasy looking globules, before mentioned, (Expt. 12th,) were observed floating on, and dispersed through the fluid.

Experiment 16*th.*—The white substance, upon examination, presented the following characteristics. It had no odour, but possessed the peculiar nauseous, bitter taste of the plant in a

very strong degree, and had an unctuous feel in the mouth, as well as between the fingers. It was insoluble in sulphuric acid, either dilute or concentrated, hot or cold, though blackened by it when concentrated. Acetic acid did not dissolve it. Potash water, nor aq. ammon. had any effect on it. Ether dissolved it readily; alcohol slowly, but completely. It was insoluble in water.

Experiment 17*th.*—The yellow or brownish, and greasy looking substance, which always appeared after the other in evaporating a tincture of the root, appeared to contain all the colouring matter capable of being extracted by the alcohol. This was so bitter, that when a piece not larger than a pin's head was held a short time in the mouth, it blistered the tongue severely, and the bitter taste remained several hours, affecting the tongue and fauces very disagreeably. It dissolves completely in alcohol, though slowly, and communicates to it a beautiful amber tint. It is insoluble in water, but after remaining in it a few hours, it loses its characteristic colour, and becomes of a dirty white; it is also rendered very pulverulent, where, as before, it was very adhesive.

Experiment 18*th.*—Two ounces of the root were boiled in twenty ounces of distilled water one hour, then allowed to cool, decanted, and a fresh portion added, and boiled half an hour; this was decanted and more water added. This operation was repeated until the water remained tasteless and colourless. The different decoctions being added together, were filtered; the colour was like that of Madeira wine. When tested with a solution of sulph. ferri. no change was produced until the fluid was concentrated, when it assumed a black colour, and threw down a slight precipitate. The tincture of iodine produced a dark purple hue, showing the presence of *fecula*. A solution of nitrate of silver caused a yellowish precipitate, showing the presence of *gum*, or *bitter principle*. Solution of acetate of lead produced a yellowish white precipitate. The decoction affects litmus paper, showing the presence of an uncombined acid. A solution of gelatine proved the presence of *tannin*. The decoction was evaporated nearly to dryness, and treated with alcohol, which separated

a portion of gum. This tincture was filtered, and evaporated nearly to dryness. The result was a dark reddish mass, which tasted at first sweet, but soon became intensely bitter, producing a swollen sensation of the lips and tongue.

Experiment 19*th.*—One ounce of the sliced root was boiled in ten ounces of alcohol fifteen minutes, and then macerated ten days. The alcohol when filtered, had the appearance of Madeira wine, and was very bitter. About one third was evaporated, and on cooling, a substance like wax was deposited, which was removed, and two ounces of distilled water added, which separated a quantity of *resin*. This was removed, and the evaporation was continued until it had the consistence of thick syrup. The taste of this was at first sweetish, soon becoming very bitter, and occasioning a swollen sensation of the lips and tongue.

Experiment 20*th.*—The root after being treated with alcohol, was dried, boiled half an hour in twelve ounces of distilled water, and then allowed to macerate three days. The water was then decanted, a fresh portion added, and boiled three quarters of an hour, when it presented a greasy appearance, which on cooling was found to be caused by wax. It was then filtered, evaporated to the consistence of a thick syrup, treated with alcohol, which separated a quantity of gum, again filtered and evaporated nearly to dryness. The result was the same as in experiment 19th, but in a lesser degree.

Experiment 21*st.*—The root, after being treated with successive portions of alcohol and water, until the bitterness was dissolved, was macerated one week in six ounces of ether. It was then filtered and four ounces distilled off, when the remainder became turbid; this on cooling deposited a copious, yellowish-white precipitate, which had the appearance and feel of wax. This, when heated, melts, swells, takes fire, and burns with a white flame, leaving a very small portion of charcoal. The remainder of the ether was distilled, and left a very small quantity of resin, which was not bitter.

Experiment 22*d.*—Two ounces of the sliced root were macerated in repeated portions of distilled water until it came off colourless and insipid. The several portions were united, fil-

tered and evaporated nearly to dryness, the extract being dark coloured, very bitter, and viscid, weighing two hundred grains. This was macerated in successive portions of alcohol as long as it dissolved any of it. The residue was a spongy mass, insipid, possessing all the properties of gum. The alcohol was then boiled with eighty grains of calcined magnesia, filtered and evaporated to dryness. The result was a dark, reddish brown mass, brittle, very bitter, nauseous and deliquescent. This may be considered as the pure *bitter principle*, coloured, as it is affected only by sub. acet. plumb. and nit. argent. which require twelve hours to show any change.

Observations.—The *first* experiment shows the action of two of the most active reagents which were employed.

By the *second* we have very clearly proved the superior power of water over alcohol in extracting the colouring and bitter materials of the root.

The object of the *fourth* experiment was to ascertain which part of the root contained the greatest quantity of active matter. The *cortical* part, it will be observed, contains by far the larger quantity.

It is shown by the *fifth* that much of its virtues is imparted even to cold water.

Experiments *third*, *seventh*, and *eighth*, prove the existence of a resinous substance, and that a considerable quantity of matter which cold water does not dissolve, is soluble in alcohol.

From these experiments we may finally conclude that this root consists of—1, tannin; 2, an acid, probably the gallic; 3, gum; 4, resin; 5, wax; 6, fecula; 7, bitter principle, or *apocynin;* 8, colouring matter; 9, woody fibre; and though I have not been able to prove its existence satisfactorily in the dry root, in the laboratory, I very strongly suspect that the fresh root and the juices of the plant contain a considerable quantity of—10, caoutchouc.

Medical properties.—The Indian hemp when taken internally appears to have four different and distinct operations upon the system:—1st. As an emetic. 2d. As a purgative.

3d. As a sudorific. 4th. As a diuretic.* Each of these effects it produces almost invariably. Its first operation when taken into the stomach is that of producing nausea, if given in sufficient quantity, (which need not be large,) and if this is increased, vomiting will be the result. It very soon evinces its action upon the peristaltic motions of the prima viæ, by producing copious feculent and watery discharges, particularly the latter, which action, when once excited, is very easily continued by the occasional administration of a wine glass full of the decoction. The next operation of this remedy is upon the skin, where it displays its sudorific properties often in a very remarkable manner. Copious perspiration almost invariably follows its exhibition, to which effect is, in a great measure, attributed by some, the powerful influence it exercises over the various forms of dropsy. The activity of its diuretic properties does not appear to be so great in many instances as in others. In the first three or four cases related, the urinary secretion, although somewhat increased in quantity, was not such as to be commensurate with the effect produced upon the disease by the exhibition of the medicine. In other instances its diuretic operation has been more manifest, causing very profuse discharges of urine, and in a very short time relieving the overloaded tissues of their burden.—*American Jour. Med. Sciences, May,* 1836.

ART. XXVI.—*A Dissertation on some Ancient Plants of Egypt.* By M. Bonastre.

Every thing which tends to recall to our recollection the sciences or the arts of ancient Egypt, is sure to excite at the present day, in the minds of the most enlightened men, the highest esteem for its former inhabitants.

Since the important labours of Dr. Young, upon hieroglyphics, and the learned discovery of M. Champollion the

* As a *sternutatory* also, it has a very powerful effect, as I have experienced in my own case; the fumes, on one occasion, produced, not only long continued and violent sneezing, with an increased discharge from the Schneiderian membrane, but were unquestionable the exciting cause of an attack of erysipelas of the face and head.

younger, upon the interpretation of the hieroglyphic system of ancient Egypt, the history of that country daily acquires a higher degree of interest. There exists, nevertheless, a branch of natural science highly essential, upon which we have but a very imperfect idea, and that part is the botany of ancient Egypt. The Medico-Botanical Society of London having honoured me with the title of corresponding member, I have thought it my duty, as an expression of my gratitude, to transmit a succinct memoir upon some vegetables found in the interior of the coffins of Egyptian mummies of the highest antiquity. I accompany this memoir with some drawings which have been taken from nature; I also send some ancient fruit.

The first is the fruit of the Mimusops, from πιπους, and οφις, *monkey face:* Octandria Monogynia: family Saponaceæ of Jussieu.

This fruit is often met with in Egyptian tombs, conjointly with the fig Sycamore, enclosed in a little basket variously coloured. The Mimusops Elengi is a proof of the great vicissitudes to which Egypt has been exposed; for this vegetable has entirely disappeared from the soil. No botanical work yet published upon that celebrated country makes mention of the Mimusops Elengi; and I have in vain consulted the Flora of Palestine, by Haselquist, that of Egypt by Prosper Alpinus, or that of Arabia by Forskall, or the illustration of the Flora of Egypt by Delille; none of these works indicate that the Elengi now actually exists in Egypt. The Mimusops is only found in the island of Amboyna, and some of the isles of the Indian Ocean. Its flowers exhale a most agreeable odour, which gives much pleasure to the females of the country, who perfume their apartments with it.

No. 2. *The Fruit Diospyros Lotus. Polygamia Diœcia; Plaqueminier; the Lotus.*

The fruit of the Diospyros does not form part of the Egyptian collection in the museum of the Louvre. It has been recently discovered by M. Passa-Lacqua, and now constitutes a part of the Berlin museum. M. Kunth, a distin-

guished botanist, has decided that this fruit belongs to the genus Diospyros, a species of lotus, which I believe, modern botanists refer to the genus Celtis of THEOPHRASTUS.

No. 3. *Myrobalan d'Egypte*, of RAUWOLF; *Balanites Egyptiaca*, DELILLE, Fl. Egypte; *Xymenia Egyptiaca*, DESFONTAINES; *El Eglyg*, of the Arabs of Fazoql; *El Ka*, of the Heathens. *Decandria Monog. Terebintaceæ.*

This ancient fruit was discovered in a little votive basket, which had served to contain offerings to the gods of Egypt, and it is frequently found in the coffins of mummies. This Myrobalan is furnished with a sort of spongy bark, more or less thick; the pellicle which covers it in its state of antiquity is of a red colour, sometimes shadowed with violet.

The stone is marked longitudinally, the sides forming five to six rather saliant angles; the shell is rather thick; the interior of the shell is filled by a kernel of a reddish brown colour, containing a quantity of very fat oil, black, rancid, and excessively acrid. The most marked character of this Myrobalan of Egypt, and which distinguishes it from all the other species, is a kind of spongy circle, placed at the point of insertion of the pedunculus, and which surrounds this organ like a little crown.

My investigation was directed to a very remarkable circumstance, which was, that the little basket that contained the Myrobalan, contained also Myrrha and Bdellium, in large fragments. Is this rencontre the effect of chance? or is it an indirect indication that Myrrha and Bdellium are produced from a vegetable of this genus? And what contributes to add some weight to this supposition is, that several druggists and apothecaries of my acquaintance have frequently brought me the nuts of the Balanistes, which they had found in cases of Bdellium, and which I have also myself collected, in a similar way, among some recently imported.

My opinion on the Tree that produces the Myrrha and Bdellium.

Myrrha and Bdellium are often found among the substances that served for the process of embalming the ancient Egyp-

tians; and Balanistes is found also among them. I have sought to explain the origin of the word Myrobalanus, and I have found that it was formed from two Greek words, Μυρρα, *myrrh*, a perfume, and βαλανος, *fructus-glans*, fruit; as if they had said, fruit or acorn of the tree that produces the myrrh, or perfume.*

Theophrastus, book ix. chap. iv., informs us that the myrrh tree was certainly thorny; φλοιν αχανθιωδη χαι ου λειον. Now the Balanistes was thorny also.

The opinion of Bruce, who attributes the Myrrh to a species of Mimosa or Acacia, has long been looked upon as an error, from the circumstance, as Dr. Duncan very judiciously remarks, in the Edinburgh New Dispensatory, that mimosas furnish but simple gum, and not the gum resin.

Ehrenberg announces that he has found, both in Nubia and Arabia, a shrub from which he has frequently collected myrrh, similar to the myrrh of commerce.

Nees Von Esenbeck has drawn this shrub from the specimens introduced by Ehrenberg, and which present the generic features of Balsamodendrum, or the Amyris of Linnæus. Nees calls it the *Balsamodendrum Myrrha.*

But I shall on this subject take the liberty of making an observation similar to that of Dr. Duncan's. The Amyris Opobalsamum, or, as it would be better to call it, the Gilead Balsamodendrum, will be found, on analysis, to produce but pure resin; that is to say, resins or bastard balms, which are perfectly soluble in alcohol and ether, and which do not contain more gum than the produce of the mimosas would resin. Besides, we know, from Pliny and De Thevenot, that the trees which produce the myrrh and the bdellium were thorny, and that they grew in the same wood.

I have analyzed a new species of myrrh that has been lately imported, and find that is composed of several principles, as follow:—

* The most part of the other species of the fruit Myrobalanus should have a similar etymology.

Analysis of a new species of the Myrrh of Commerce.

	Parts.
Gum, soluble - - - - - -	50
——, insoluble - - - - - -	
Rosin, soluble, and subresin -	38
Oil, volatile, fluid - - - - -	3
A bitter extract, non-resinous -	4
Acid, not determined	
Salt, potass base - - - - -	5
———— chalk - - - - -	
Silica, adhering only	
	100

This species of myrrh does not differ much in its constituent parts from the ancient myrrh of Troglodytia; but a very important remark, and one first made by myself, is that real myrrh turns red, and even blue, on coming in contact with nitric acid, placed under certain circumstances, which does not happen with the new species.

We are no more acquainted with the tree that produces the myrrh, than we are with the tree that produces the bdellium; but having been frequently struck with the repeated presence of the nuts of the Balanistes Egyptiaca with myrrh and bdellium in ancient monuments, and especially in some cases of bdellium recently imported into France, I have no difficulty in supposing that these balanistes may furnish one or the other of these two resinous gums. However, I do not lean exclusively to this opinion; and, as the tree is thorny according to Theophrastus, the presence of the fruit of the balanistes may be accounted for by supposing it to have fallen from some neighbouring tree, at the moment the Arabs were collecting the crops of myrrh and of bdellium.

I relate this circumstance to prove to the Medico-Botanical Society of London, that I have already occupied myself with the proposed question. I will also add, that on the departure for Egypt, in 1829, of the commission of French savans, I gave the necessary instructions for procuring a specimen of the tree that produces the real myrrh; but the labours of this

commission having been directed to objects of antiquity of quite another nature, I have not been able to obtain the information. On the one hand, the French savans ascended the Nile only as far as the second cataract; but it is in a much higher latitude, in a country much more dangerous to traverse, that the tree grows which produces the real myrrh. I possess on this subject some very circumstantial details.

No. 4 *is the Fruit of the Rhamnus Lotus* of the famed tree of the *Lotophagi.*

The fruit of which, sweet as honey, had on foreigners the effect of banishing the regret they felt for their country. This fruit, as is well known, is a species of the Jujube tree, Ziziphus Lotus, or may be that of Nabeca, which has an extraordinary sweet taste: it is originally from Africa. The nut is hard, and rather of an elongated shape; the kernel has become black, through the lapse of ages; its resemblance is perfect. This species of lotus, γοτοφαγον δενδρον ς, was found in a small votive basket, full of offerings.

No. 5. *Fruit of the Pine, Pinus Pinea.*

It was discovered, as well as a cone of cedar of Lebanon, (Cedrus Lebani,) in the catacomb of Thebes. These two fruits form a part of the Egyptian museum at Paris: they are the only two of the species that exist in an antique state.

No. 6, are *Seeds of the Lepdium:* λεπιδιον of Dioscor.

No. 7. *The Grain or Seed of Mimusops Elengi.*

No. 8 *Corn: Triticum Æstivium;* πυρας of Homer.

This corn is a little better preserved, and was discovered in a vase of red clay, which was enclosed in the tomb of an agriculturist.

No. 9. *Barley; Hordeum distichum;* χριζη, (from the same tomb.)

No. 10. *Raisins; Vitis vinifera,* in a high state of preservation.

No. 11. *Remains of a Crown or Garland,* which I shall call "*Demotique,*" or *Popular.*

This garland was generally formed of the leaves of some plant,

the genus of which it is difficult to determine, but it has some relation to Unona Æthiopica. The flowers are those of the flowery capitules of the Mimosa nilotica. This kind of garland encircled often the bodies of certain mummies from head to foot.

No. 12. *Date*, of the *Phœnix Dactylifera.*

No. 13. *Arequier*, or *Fruit of a new Species of the Genus Areca;*

Called Areca Pane Lacquæ by M. Kunth, the botanist: the living original is unknown.

No. 14. *Lentilles de Peluse; Lens Pelusiaca.*

This is the far-famed vegetable which is thought to be a lineal descendant of the lentils, for a plate of which Esau sold his birthright to Jacob. These lentils are of a much smaller species than those at present used in France.

The lentils of Pelusium are at present cultivated in the environs of this Egyptian city, in the neighbourhood of that branch of the Nile called Pelusiad, and from which the species derives its name. This vegetable is extremely difficult to naturalize in France. I send some to Mr. Humphry Gibbs, in order to make the experiment of raising them in England; an experiment, the result of which I request he will communicate to me at a future period.

No. 15. *Another Leguminous Seed.*

This seed, which I lately discovered in a small vase of clay, is extremely rare. I have not been able to determine its species: whether it is a Lathyrus, a Cicercula, or a species of Trigonella, I am ignorant. This seed is smooth, because it is deprived of the pellicle that surrounded it; it is of an iron red colour.—*Lond. Med. and Physical Journ., November* 1832.

ART. XXVII.—Remarks on the Juribali, or Euribali, (*so called by the Natives,*) *a Febrifuge Bark Tree of Pomeroon.*

By John Hancock, M. D.

This tree is found in the forests not far distant from the coast. It is small, seldom exceeding thirty feet in height, and eight or ten inches in diameter at the base. It belongs to the eighth class and first order of the sexual system of Linnæus, and to the natural family of Meliaceæ of Jussieu. The calyx is very small, of one leaf, entire. The corolla consists of four petals, lance-ovate, white, spreading. The nectarium is a monophyllous, bell-shaped tube, eight-toothed, bloated or inflate, bearing the stamina in its clefts or notches: this part is described by several authors as the filaments united. The stamina are without filaments. The anthers are eight in number, ovate, erect, seated upon the mouth of the nectarium. The germ is obtusely conic and pubescent. The style is very short, bearing capitate, or rather coronate, stigmata. The pericarpium is a capsule, ovate, one-celled, trivalved, the valves bearing rudiments of septa at their extremities: it contains a single seed, which is roundish, black, crowned with a trifid wing, arillate on one side only; it is veined, and resembles the nutmeg in shape, but is only half its size, with a fleshy albumen and foliaceous cotyledons. The flowers are numerous, on long, lax, divaricate panicles.

Nature has distinguished this tree in a very remarkable manner; for it may be truly said to bear two distinct kinds of leaves, the stipules being, at certain seasons, so developed as to be not unfrequently confounded with the common leaves of the tree, but are distinguished by their shape and position. They are placed in pairs, and scattered along the branches; ear-shaped, or rounded and varied, obtuse and petiolate.

The common, or proper leaves, are alternate, oblong, pointed; they are scattered, without much order, on the branches; the petioles are short, compressed, and channelled. The bark is rough and gray externally, and, on peeling it from the tree, the epidermis scales off, and leaves the true bark of a smooth red surface. Its odour is peculiar, some-

what like that of tea-leaves. The wood of the trunk is dense and whitish; that of the branches somewhat coloured, and traversed by a pith in the centre. The seed, crowned with a foliaceous appendage, corresponds with that of the first tribe, Meliaceæ, of De Candolle; in other respects, to his second tribe, Trichilieæ.*

In respect to the calyx, (being quite entire,) it seems unique, as all the others of the order are divided or dentate. The structure of the flower, in all other respects, is strictly conformable to the order Meliaceæ; whilst, in the fruit, (a single-seeded capsule,) it agrees with very few of them: in one species only, *Trichilia moschata*, we observe it noted *Capsulis submonospermis.*

The most remarkable disparity, however, seems to be in the presence of stipulæ, which have hitherto in no instance been observed in this order.

The Juribali, therefore, will be found, I presume, to constitute a distinct genus from any yet described: it so appears, at least, by comparing it with the forty-fourth order in De Candolle's prodromus. The admirable arrangement, conciseness, and precision of this work enables us, at one glance almost, to observe the actual state of the science, so far as it goes, and, when completed, it will furnish an invaluable treasure to the botanist.

The bark of the Juribali gives a deep and lively red colour to water and spirit, in both of which its virtues are very soluble. It is a very potent bitter and astringent; in these qualities much exceeding the Peruvian bark, and will often be found to succeed after the latter has failed to remove an intermittent. I have commonly employed it in about half the quantity I should do for a corresponding dose of the Peruvian bark, to which, in fevers of a malignant and typhoid nature, it appears to be far superior. Notwithstanding its astringen-

* The learned author has this remark on the order Meliaceæ: "Ordo non satis definitus et forsan typos plurimos diversos colligius sed ob descriptiones plurium generum maneas, in statu scientiæ præsenti extricatu difficillimus et botanis heritis commendandus." Pars i. p. 619.

cy, it does not, like Peruvian bark, constipate the bowels or affect the head, but generally opens the pores of the skin and promotes diaphoresis. To render it still more effectual, it should be taken warm.

More than one-fourth the weight of this bark is soluble in water, whilst, according to Fabroni's experiments, the cinchona yields but about one-sixth or one-eighth. The active principle appears to be readily soluble in aqueous menstrua, and is therefore taken with much more facility than an insoluble woody mass, which passes the throat with difficulty and disgust, and often lies a heavy, indigestible load on the stomach. Such considerations may one day appear of more importance than at present, when the prevailing infatuations respecting quinine and the new alkaloids shall have subsided, and given place to the exercise of sober reason and the examination of new doctrines by careful experiment.

I shall here notice the results of a few chemical experiments made on this bark, although I must confess I consider their action to be of very little consequence in elucidating the medicinal powers of any vegetable remedy. Gelatin forms with the infusion a precipitate of a reddish brown colour. Emetic tartar, nitrates of silver and mercury, acetates of lead and of alumina, all throw down precipitates of a light yellow colour; sulphate of copper affords a gray, and sulphate of iron a greenish blue precipitate. The carbonates of potash and soda render the infusion red brown, but form no precipitate. Lime water first renders the infusion green, then deep red, and throws down a copious precipitate of the same colour.

These experiments were made for the sake of comparison, consecutively with others, on infusions of cinchona of more marked sensible qualities, but which I could not refer with any certainty to their species. The results were in some cases similar, in others widely different in respect to the action of reagents; i. e. on the infusion of the Juribali and the cinchonas.

The recent decoction or infusion is of a red colour, but remains turbid for some days. After infusing it for two or

three weeks, it gradually assumes a deep red tinge, more transparent, having deposited a flocculent sediment. In this state it gives a durable red colour to stuffs, and precipitates the infusion of galls, which the recent infusion does not.

It hence seems to be probable that, by the combination, or through some slight acidity, the infusion possesses the power of dissolving an alkaline principle, perhaps cinchonine, which is not taken up by pure water, or at least is not indicated in the recent infusion. It might be interesting to ascertain if the sulphuric or muriatic acids would evolve an alkaloid similar to those which are found in certain species of the genus cinchona.

The bark contains a resinoid extractive, which is soluble in boiling water, but not in cold; the decoction, therefore, becomes turbid on cooling, and gradually deposits a red powder. This deposit is soluble in alcohol, and appears to be a simple resin, and not the active principle of the bark; it is insipid when washed in cold water. From this, and some other experiments, I concluded that *cold* water took up the *active* parts as well as hot.

This bark not only cures intermittent fevers, but remittents, also those of a typhoid malignant kind, and those destructive fevers in which the cinchona often does more harm than good. In some measure it emulates rhubarb, being cordial and purgative according to the dose; it is also a powerful diaphoretic, especially if taken warm, by which its value is certainly much enhanced as a febrifuge. I have used it in agues and in the malignant remittent fevers of the tropics, very freely, with the most decisive success, always in the form of infusion, commencing at any time or stage of the fever that may be present. By infusing an ounce of the bark in a quart of hot water, and giving a glassful once in two or three hours, I think it bids fair to be a useful remedy in smallpox and measles.

In a few instances the pulse seemed to be accelerated after its use, but was generally rendered slower and fuller; but I never ascertained the conditions of the patients under which these different effects took place, to my own satisfaction.

Before quitting the present subject, I beg leave to allude to an opinion which has long prevailed in my mind, and which may be a novel one, or may not; but I have never heard or seen it adverted to, and, if correct, it may be worthy the candid consideration of the members of this Society, and the profession at large.

We must all admit the great value and important advantages derived from the Peruvian bark in the practice of medicine. It is chiefly in fevers that its uses are to be regarded as paramount; but let us consider how far it is entitled to such unlimited encomiums as a febrifuge. It is certainly excellent as a tonic, and as such, is applicable in the treatment of very many disorders. It affords one of the most efficient means of suspending the returns of the *common* intermittents. I say common, because, in the very malignant and bilious intermittent fevers of warm countries at least, often met with, it does more harm than good; and in the ardent, typhoid, and remittent fevers, and where most danger lies, we find its uses to be the most equivocal, and not unfrequently to produce a fatal metastasis on the brain: and in such fevers, those of the most dangerous tendency, it is rarely prescribed till the fever has subsided, when the skin has become moist, the tongue cleaning, sediment in the urine &c., before the main remedy can be exhibited; and thus the time must be frittered away in *expectancy*, whilst the disease is making its inroads, until it has worn itself out, and the principle of life, perhaps, along with it.* When debility is the chief symptom prevailing, and when, in most cases, the danger is actually over, the bark is thrown in, and gets the merit of the cure! Under this view, therefore, it seems to me, that its uses are not so strictly what its title *febrifuge* imports. It is not so much *to drive away* the fever, as to prevent its recurrence, when nine times in ten *dangerous* remittent fevers will not recur after once coming to a crisis. A real and genuine febrifuge, I should conceive, is that which not only braces the nerves as a preventive, but

* Our profession has given too much reason for the satire of Voltaire, when he remarks, that "Nature cures diseases, and the physician assumes the credit."

which is capable of *driving away* or taking off the febrile paroxysm. Such is the true meaning I should attach to a febrifuge or an antifebrile remedy, and as such I conceive the remedy here recommended to be. But I shall leave the subject to the examination of better qualified judges.

This is, as before mentioned, but a small tree; there is another which grows very large, often confounded under the same name by the Arowaks: it is the *Icica altissima* of Aublet. The remarkable large stipula, however, distinguishes the right kind most readily from every other tree which might otherwise resemble it; the scaly cuticle is also a good mark of distinction.

My experience is chiefly confined to its use in fever, but it may doubtless be regarded as a general tonic, and applicable, perhaps, in most cases as a substitute for the cinchona; externally it is found to be a very useful application to foul and illconditioned ulcers, either in powder or decoction.

There is another tree of the inland parts, called *Caramata*, and *Arumari* by the natives, which affords likewise a very valuable remedy, a very bitter bark, which, from many trials I have made in those cases, appears to be equally safe and efficacious in those dangerous typhoid and remittent fevers in which the cinchona is either useless or pernicious, especially when exhibited during the febrile excitement. Being partial to the combination of similar remedies, I have in a few instances, when both happened to be at hand, infused the two barks (Juribali and Caramata) together, half an ounce of each, grossly powdered, to a quart of boiling water, giving the patient a wineglassful of the infusion, kept warm before the fire, once in two to four or six hours, according to the urgency of the case, and it has appeared to me to operate in this way with uncommon efficacy: but no one person singly is fit to decide upon the positive or comparative merits of a new remedy; and I shall, with great pleasure, submit these two medicinal barks, for further proofs and experiments, to the learned members of this Society, together with some imperfect botanical specimens of the trees from which they are procured; and, being soon to return to British Guiana, shall

not fail to forward to the Society sufficient supplies* for making the requisite trials of their virtues, being fully convinced that no institution can afford such advantages as the Medico-Botanical Society for proving and fully investigating all the details which are requisite for the complete development of the powers of new remedies, and for deciding on their real or imaginary virtues.

ART. XXVIII.—*New Researches on Opium.* By S. PELLETIER.

FIRST PART.

Analysis of Opium.—A kilogramme, (2½ lbs.) of brittle Smyrna opium, was contused and macerated in two kilogrammes (five pounds,) of cold distilled water, the solution of the opium was aided by kneading it; the fluid was decanted from the marc, and the latter was four times successively, treated in the same manner, and washed under a small jet of water. The solutions were added together and evaporated with great care, to obtain a solid extract.

The opium was thus divided into two portions—one soluble in cold water, the other insoluble. We shall distinguish the first by the name of extract of opium, and the latter by the name of marc. The relation between them varies; we have never found it more than 12 of extract to 4 of marc.

Examination of the Extract of Opium.—The extract was redissolved in distilled water, when it deposited a brilliant, and as if crystalline, substance; this washed, dried, and dissolved in alcohol, crystallized in pearly, flattened prisms. It was narcotine, without a trace of morphine. It was by thus treating opium by water, that M. Derosne first obtained narcotine. We shall hereafter see that the greatest part of the narcotine contained in opium remains in the marc, that is, in the portion not dissolved by the water.

The solution of the extract of opium, from which the nar-

* I have been extremely disappointed of these, and numerous other interesting articles, which were promised to be forwarded from the same quarter, during my abode in England.

cotine had been thus separated, if not wholly, at least for the greatest part, was heated to 212° F., and ammonia added; the first drops of this caused a precipitate which was redissolved in the liquid; an excess of ammonia was used, to be certain of decomposing the whole of the salt of morphine; but, as the morphine is slightly soluble in ammonia, the ebullition was kept up for ten minutes to drive off this excess of alkali. The mixture was then slowly cooled, and finally placed in a very cool situation—when the morphine precipitated in a crystalline form. There was a crust on the surface of the liquid, formed of morphine mixed with a substance of a resinous appearance.

If the boiling solution of opium, containing the excess of ammonia, be filtered, the clear fluid that passes through affords on cooling, a considerable quantity of morphine, much more, indeed, than might have been presumed, from the insolubility of morphine in water. This may be explained, by an observation of M. Buisson, which is confirmed by my experiments, that at the boiling point, morphine decomposes in part the ammoniacal salts, and gives rise to triple salts which are themselves decomposed on cooling, under the influence of an excess of ammonia and the force of cohesion.

The morphine obtained by crystallization from the filtered boiling solution, is very beautiful; that, on the contrary, which remains on the filter is black, and mixed with much of the resinous matter. The morphine separated from the cold solution by the ammonia, is far from being pure; in fact, if it be treated by sulphuric ether, this latter acquires a yellow colour, and on spontaneous evaporation affords an oily substance, in which crystals of narcotine, and the substance hereafter to be spoken of under the name of meconine, may be perceived.

The modes of purifying morphine are well known—they consist in dissolving and crystallizing it several times, in treating it by boiling alcohol, adding a little animal charcoal. The morphine ought then to be reduced to an impalpable powder, and subjected to the action of sulphuric ether, which dissolves the narcotine. At the same time, it is very difficult by this

means, to obtain morphine perfectly free from narcotine. I prefer dissolving the morphine in sulphuric acid, and thus forming a sulphurate which readily crystallizes. By this mode, the narcotine is entirely separated; for if an excess of acid is not used, the narcotine remains undissolved, whilst if it be dissolved by an excess of acid, the narcotine does not crystallize, and remains in the mother waters. It is almost superfluous to add, that the sulphate of morphine must be decomposed to obtain the morphine; for this purpose magnesia is preferred. The sulphate of magnesia is removed by washing, whilst the morphine remains with the excess of magnesia, and can be taken up by alcohol.

After having separated and obtained the greater part of the morphine contained in the solution by means of ammonia, the mother waters are evaporated one-half. On cooling they deposit an additional quantity of morphine, which must be purified as above. In the fluid from which the morphine has been separated, I found barytes water, which immediately occasioned another precipitate. It was from a similar precipitate that Seguin obtained the acid of opium. Sertuerner, by using the muriate of barytes, produced an analogous precipitate.

To separate the meconic acid from the barytes, Sertuerner and Robiquet advise washing the precipitate with distilled water and decomposing it by a slight excess of sulphuric acid diluted with water; the sulphuric acid takes up the barytes. By evaporating the liquid with care, and permitting it to cool, the meconic is obtained in crystals; these may be purified by washing them with a little cold water, and drying them by a gentle heat; they may also be sublimed by cautiously heating them in a glass retort.

I have modified this in one particular only, but this I conceive to be important. It consists in several times treating the meconate of barytes, with boiling alcohol, before subjecting it to the action of the sulphuric acid; by this means, the meconate is deprived of a brown colouring matter, which would otherwise remain united to the meconic acid, and would retard its crystallization. Care must also be taken, not

to use too much sulphuric acid, as on the concentration of the solution, it reacts on the meconic acid and chars it. I am also of opinion that meconic acid should not be sublimed, as the sublimed acid does not appear to be absolutely identical with that which has not undergone such an operation.

The solution of the extract of opium, from which these three crystalline principles, viz. narcotine, morphine, and meconic acid were separated, was treated by subcarbonate of ammonia, to separate the excess of barytes used. By heating the solution, the excess of the ammonia was driven off, and the fluid was evaporated to a syrupy consistence, and left for several days in a cool place; when it assumed the appearance of a pulpy mass, in which crystals were to be remarked. This mass was drained and then strongly pressed between cloths. In this state it was treated by boiling alcohol of 40° B, which dissolved a portion of it, and left a black viscous matter, to be noticed hereafter.

The alcoholic liquors were subjected to distillation, and by this operation reduced to a small bulk. On cooling I obtained a crystalline substance, which was easily purified, and became of a dazzling white colour, by dissolving and crystallizing it several times. This substance, which I recognised as entirely new, was soluble in boiling water, and was readily purified by solution and crystallization in water; and was obtained very white by heating it with purified animal charcoal. To this substance I have given the name of *narceine*, and which will be shown to differ essentially from morphine, narcotine, and a third crystalline substance which has been designated by M. Couerbe as *meconine*.

This latter substance often accompanies the narceine, crystallizes with it, and is always to be met with in the mother waters which have produced the narceine. The narceine being soluble in ether, these two substances may be readily separated from each other. It was by treating what is known in manufactories, by the name of the fatty matter of morphine, by ether, that M. Couerbe first obtained meconine in 1830, when being the head of my chemical establishment, he operated on large quantities of opium. From these data,

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it was natural for us to seek for meconine in the mother waters of narceine—for this purpose, we treated these mother waters, and those which had furnished the pulpy matter, with sulphuric ether. The ether acquired a yellow colour. On evaporation it produced crystals imbedded in a fatty matter; these crystals were meconine, which might have been obtained white, by a second crystallization; but to insure their purity, they should be treated with boiling water, in which they are soluble, whilst the fatty matter and a small quantity of narcotine remains unacted upon. The narcotine can then be taken up and the fatty matter separated by means of hydrochloric acid.

Meconine is a substance which possesses very singular chemical properties, and is well entitled to a separate notice, but this I leave to M. Couerbe, who is at present engaged in the examination of it.* But though this substance is wholly different from morphine, narcotine, and narceine, I think it right to state that it appears to be identical with the peculiar substance found in opium by M. Dublanc, jr. and which was described by this gentleman in a memoir presented to the Royal Academy of Medicine in 1826, and which has recently been published in the *Annales de Physique et de Chimie.*

However, it is not the first time that the same substance has been discovered by two chemists, unknown to each other. I can state that M. Couerbe had no knowledge of the labours of M. Dublanc, and shall at present confine myself to identifying the existence of meconine as an immediate principle, and showing how it is to be obtained, in the systematic process I am endeavouring to lay down for the analysis of opium.

Continuing the analysis of the soluble portion of opium, and from which, narcotine, morphine, meconine, narceine and meconic acid have been separated; it remains to examine the viscous black substance, remaining after the solution of the meconine by ether. This substance, when dissolved in water, leaves an insoluble residue, analogous to the marc of opium, of which we shall presently speak; this insoluble portion, may be considered as mixed with, and even held in solution, by the influence of the other principles. The

* See page 52. vol. 5.

portion of the black viscous matter which was soluble in water, appeared to contain a substance which had acid properties, that is, of uniting with salifiable bases, and of precipitating certain metallic salts. This acid substance is mixed with a brown matter which adheres to it in all its combinations, and it is difficult to decide whether it is not this brown matter that performs the part of an acid. However this may be, this matter is also mixed with a gummy substance, and with more or less of the various substances already spoken of. To obtain it as pure as possible we precipitated it by a salt of lead. After having separated from it a gummy matter, insoluble in alcohol, the precipitate was washed and treated with sulphuretted hydrogen, when the fluid not only became acid, but also highly coloured. As I have not been able to obtain this acid in a colourless, crystalline or volatile state, or enjoying characteristic properties, I shall not hazard an opinion as to its nature.

Examination of the Marc of Opium.—It is well known that in treating opium by sulphuric ether, a tincture is obtained, which, on spontaneous evaporation, affords three substances, which may be imperfectly separated from each other mechanically. The first of these is narcotine, the other is a sort of oily matter, and the third is that to which Robiquet has given the name of caoutchouc. The marc of opium heated in the same way, furnished the same products—but I did not pursue this method, as the substances thus obtained could not be perfectly separated from each other.

The marc of opium was treated wtth alcohol at 36 degrees. I aided the action of it by applying heat, but not to the boiling point, and did not filter the solutions until they had become cool, experience having taught me, that the substance called caoutchouc, was scarcely soluble in hot alcohol, and that the little that remained so, separated on cooling. I therefore designedly left it in the marc.

The alcoholic solutions distilled to two-thirds, furnished on cooling a considerable quantity of narcotine. The alcoholic mother waters became too aqueous, and were evaporated to dryness in a water bath; the residue dissolved in boiling

alcohol at 36°, also afforded narcotine on cooling. When, on repetitions of the same process, no more narcotine was obtained, the residue, which was a soft, fatty, unctuous mass, of a blackish brown colour, was subjected to the action of boiling water, several times; at first the water was deeply tinged of a blackish brown colour, but at last was colourless. These solutions, on evaporation, afforded crystals, which were removed as soon as they formed, by means of a silver skimmer. The residue was an extractive matter, which had all the characters and properties of the gummy extract of opium; the crystals were narcotine.

The marc, notwithstanding the numerous washings to which it had been subjected, still retained a little extractive matter, which proves that after having exhausted the action of one solvent on a vegetable substance, that this same agent ought again to be made use of, after certain principles which, from their bulk, opposed its action, have themselves been subsequently removed by other agents.

The unctuous matter, thus freed from the extractive parts, was wholly soluble in alcohol at 40°. It may be well to notice a fact in this place, which will interest those chemists who are engaged in vegetable analyses. Before I perceived that the unctuous matter contained some extract of opium, of which it could not be freed by repeated washings with boiling water, even when it was two or three times redissolved in weak alcohol, to renew the surfaces; I thought it advantageous to subject it to the action of boiling alcohol at 40°, but as on cooling, there was a separation of a substance of a resinous appearance, whilst by the evaporation of the cold filtered liquids, I obtained a resinous matter, soluble in alcohol, I was induced to admit that opium contained two resins, whilst in fact there is but one substance to which this name can be applied, as will be hereafter seen. I mistook for a peculiar resin, characterized by its insolubility in cold alcohol, a mixture or indefinite combination of the unctuous matter with the extract of opium. To return to this unctuous matter, freed from extractive matter: this matter, treated by sulphuric ether, separated into two portions, one soluble in the

ether, the other, friable, brown, and insipid; which, as I shall show in the second part of this memoir, is the true resin of opium, which hitherto had not been isolated, and which had been confounded with caoutchouc of opium and the oily matter, which latter is obtained by the spontaneous evaporation of the ether. This oleaginous matter is soft and almost fluid, is soluble in alcohol and the oils; its taste is acrid and burning, which would seem to show that it must have action on the human economy. We shall again advert to this substance. However, as it still retains some narcotine, which adheres to all the matters soluble in ether, and which we had not entirely separated by the repeated crystallizations, it is necessary to entirely remove the fatty matter from it, to treat this substance with water, acidulated with hydrochloric acid; the narcotine is dissolved, and the fatty matter wholly deprived of it, floats on the surface of the solution.

The portion of the marc from which the alcohol had taken up all that was soluble, was subjected to the action of ether, which became coloured; and it required several treatments with this menstruum before the marc was exhausted. By spontaneous evaporation of the ether, I obtained a brown and very elastic substance, this was the caoutchouc of M. Robiquet; by treating it with boiling alcohol, I separated some oleaginous matter and a little narcotine; the caoutchouc then became more firm, was less viscous, and perfectly resembled, in its physical character, the real article.

Although it does not comport with my plan to speak of the properties of the immediate principles of opium in this place, I think it right to remark, that the three substances obtained from the marc of opium by alcohol and ether, differ from each other, in the resin being soluble in alcohol and insoluble in ether, whilst the caoutchouc is soluble in ether and insoluble in alcohol, and the oily matter is soluble in both these fluids.

The marc exhausted by alcohol and ether was then treated with naptha, but afforded nothing to this liquid. It is to be remarked, however, that if naptha be used before the ether, that it dissolves the caoutchouc; but it is better to employ the ether for this purpose, as the caoutchouc can never be entirely freed from the naptha.

The marc, after these various operations, was reduced to a very small bulk. Recollecting that it had not yet been subjected to the action of boiling water, and wishing, moreover, to ascertain if the assertion of M. Seguin was correct, that it contained an amylaceous matter; I boiled it in distilled water; the water became frothy, and slightly opalescent; it was rendered a little turbid by alcohol and the subacetate of lead, but it struck no blue colour with the tincture of iodine, or with the hydriodate of potassa and chlorine. Hence, there was no starch, and the small quantity of the substance which had been dissolved by the boiling water was rather gummy than amylaceous. However, only traces of gum could be detected, for the gum must have been dissolved in the cold water; and formed, in all probability, a part of the uncrystallizable substances which accompanied the brown acid. The residue appeared to be formed of two very distinct substances; one fibrous, was evidently woody fibre, and could be taken up with small forceps; the other, having the appearance of bran, was not readily recognizable by its external characters, and was therefore subjected to experiments. Burned on live coals, it gave out a smell which was a union of that of vegeto-animal matter and of woody fibre; treated with a solution of potassa, it swelled and finally dissolved. From these and other characters, I recognized it to be bassorine, or the base of gum Basora.

From this analysis it appears that opium is composed of at least twelve substances. Of these, five can be obtained perfectly white, and in a crystalline state, viz. morphine, narcotine, meconine, narceine, and meconic acid. The others, which are not crystalline, may, however, with the exception of the brown acid, and perhaps the gummy matter, be considered as immediate principles, as will be shown in the second part of this memoir.

Principles in Opium. 1. Narcotine. 2. Morphine. 3. Meconic acid. 4. Meconine. 5. Narceine. 6. Brown acid and extractive matter. 7. Peculiar resin. 8. Fat oil. 9. Caoutchouc. 10. Gum. 11. Bassorine. 12. Woody fibre.

Opium also appears to contain a volatile principle, which impregnates water distilled over it.

ART. XXIX.—*On the Medical Properties of the Piscidia Erythrina, or Jamaica Dogwood. By* WILLIAM HAMILTON, M. B., *Corresponding Member of the Medico-Botanical Society.*

THE Jamaica dogwood tree, or Piscidia Erythrina, is a small branching tree, of from fifteen to twenty feet in height, common in the low grounds near the sea, in most of the West India islands, and every where by the road sides (according to JACQUIN) in Jamaica, where it flowers, according to my observations, in the months of March, April, and May, during which it is wholly destitute of leaves, which rarely appear before the period of inflorescence has passed. It belongs to the Linnæan class and order of Diadelphia Decandria, and is distinguished from other plants of the same class and order, by its acute stigma, and four-winged legume, enclosing a number of compressed, oblong-reniform seeds. Its leaves, which are periodically deciduous, are unequally pinnated, with ovate, very entire, pubescent leaflets. Towards the middle or latter end of March, thyrsoidal racemes of white papilionaceous flowers, of rather a large size, wholly destitute of smell, make their appearance at the extremities of the younger branches, and continue progressively expanding till about the middle of May, when they are succeeded by clusters of linear compressed legumes, furnished with four membranaceous, longitudinal wings, greatly exceeding the legume itself in breadth; the legume consists of one cell, nearly united between the seeds, so as to appear to a careless observer like a many-celled legume. The seeds, which I have always observed to be very much compressed, and of an oblong reniform shape, SWARTZ describes as roundish.

According to Jacquin, the leaves and branches of this tree, bruised and mixed with water, intoxicate the fish it contains, making them swim blindly on the surface, so as to become an easy prey to the fisherman: his words are, "Folia ramulique contusa, et aquis injecta, pisces inebriant, ut aquis supernatent, manuque capi possint: quam virtutem cum multis aliis

plantis Americanis communem hæc arbor possidet." Among the other West India plants to which he refers in the concluding part of the sentence as sharing this property of intoxicating fish, are the Jacquinia Armillaris, called by the Spaniards *el Barbasco*, by the French *Bois bracelets*, and by the English *piecrust*, a low but ornamental shrub common on the seacoast in most of the Antilles, and an ingredient in one of the most deadly of the toxiques of South America; the Galega toxicaria, and a plant of which I have never been able to obtain any true account, which the Caribs of St. Vincent were said to employ, in a somewhat different manner, for the same purpose, under the name of *Wonga root*. From the similarity of the effect produced by all these various substances on the animal economy, it is not unreasonable to conjecture that this uniformity of action arises from the uniform presence of the same active principle in each, analogous to the morphine, quinine, tannin, &c., which are found to pervade a variety of dissimilar plants, communicating to them, however, a similarity of properties, more or less decided, according to the degree of concentration in which it exists in each. Hence it might be worth while to subject them all to the test of medical experiment, in order to determine how far their active properties are capable of being rendered subservient to the wants of mankind.

The bark of the dogwood root, previons to being used for fish poisoning, as the sport is called, is macerated with the lees of the stillhouse, and temper or quicklime; and put into baskets of a convenient size, with one of which each of the fishermen is provided: thus equipped, one or more of them embark in one or more boats, according to the size of the bay selected for the sport, and, pushing to a sufficient distance from the shore, they hold their baskets over the side of the boat in the water, which they continue to agitate with their baskets till the whole of their contents is washed out, and the water has become impregnated with the intoxicating preparation, which happens sooner and to a wider or narrower extent according to the number of washers and boats, and the dimensions of the bay. In a little time the smaller

fish are seen floating, apparently dead, upon the surface of the water, while the larger fish, capable of longer resisting the stupifying influence of the medicated water, swim wildly about, raising their heads above the narcotic fluid, and striving, as it were, to breathe a purer atmosphere: these surrender themselves an easy prey to the persons in the boats, who catch them with their hands as they float by, perfectly unresisting; if thrown, immediately after being taken, into fresh and pure seawater, there is no doubt but that, with the exception perhaps of the smaller fry, they would soon recover. Neither their flavour nor wholesomeness is in the least impaired by the manner in which they have been taken; but, from the number which are uselessly destroyed by this mode of taking fish, poisoning has been prohibited in many of our islands. The manner in which the Wonga root was used by the Carribs differs in appearance from this, which I myself witnessed, but in principle is indisputably the same: they stuffed, as I was informed, the bellies of several small fish with a preparation of the root, and threw the fish thus doctored overboard, when they were devoured with avidity by the larger fish: these latter being stupified by the dose, became, in their turn, the prey of the icthyophagists in the boats.

Struck with the singular and decided effect of the dogwood bark upon the fish, I was induced to investigate its properties as an internal remedy upon the human frame, and commenced, accordingly, a series of experiments upon myself with the bark, in substance, in infusion, in decoction, and in tincture; which last I found to be the only efficient and practicable mode of exhibition, since the active constituent appears to be a resin insoluble in any thing but rectified spirit: hence the necessity of the stillhouse lees, which contain alcohol in a highly concentrated state, in combination with a powerful and deleterious empyreumatic oil, in the preparation of the bark for fish poisoning.

My tincture was prepared by macerating one ounce of the coarsely powdered bark in twelve ounces, by measure, of rectified spirit, which I had brought with me from England, for twenty-four hours, and straining. The tincture thus ob-

tained was of a fine honey yellow, and appeared to be fully impregnated with the active principle of the bark: it had nothing striking or offensive in its taste or smell, but, on being dropped into water, it communicated to it an opaline or milky hue, evidently from the separation of a resin; for, on suffering some of the undiluted tincture to evaporate in a glass, the sides were incrusted with a white film of the resin which remained behind. Labouring at the time under a severe toothache, which seemed to set sleep at defiance, I took at bedtime a drachm measure of this tincture in a tumbler of cold water, and laid down, with the uncorked phial in the one hand and the empty glass in the other, to speculate upon the manner of its operation on the system. The dose was by no means disagreeable to take, nor was its action on the mouth and throat unpleasant, like that of the bark in substance, which irritated the fauces like the Daphne mezereum or the croton oil; but, soon after swallowing the dose, I became sensible of a burning sensation in the epigastric region, spreading rapidly to the surface, and terminating in a copious diaphoresis, in the midst of which I was surprised by a sleep so profound that I was utterly unconscious of existence from about eight o'clock at night till eight the following morning, when I awoke free from pain of every description, and found myself still grasping the uncorked phial in one hand, from which not a drop had been spilled, and the empty glass in the other. No unpleasant sensation followed, as is usually the case after opiates, from the exhibition of what was perhaps a needlessly large dose; nor did a friend, whom, though in perfect health, I persuaded to repeat my experiment in his own, suffer the slightest inconvenience from an equally full dose; his only observation was, that he never had slept so sound in his life as he did that night. I next tried its efficacy as a topical application in cases of carious teeth, introducing a pledget of cotton, impregnated with the tincture, into the cavity, and never knew an instance of a return of pain after this application. Experiments are yet wanting to determine the minimum doses requisite in both cases, and these it were much to be desired to have instituted by some medical prac-

titioner resident in the West Indies; taking care, however, to employ bark gathered about the full moon in April, when the plant is in flower, and the best rectified spirits, or even pure alcohol, in his experiments. An inattention to these cautions will completely defeat the object of the experiments, and, in place of obtaining an active and valuable medicinal preparation, he will obtain one perfectly worthless and inoperative.

Lond. Med. and Physical Journal.

ART. XXX.—*Remarks on the Euphorbia corrollata. By* WILLIAM ZOLLICKOFFER, M. D.

To such as are desirous of becoming acquainted with the remedial virtues and consecutive therapeutic operation of the vegetable productions which are indigenous to the United States, it is presumed no apology is necessary for my again intruding on the medical community, with another communication that ranges within the limits of the medico-botanical literature of this country; and to those who entertain the sentiment, that the list of our native medicinal agents is at present sufficiently enlarged to effect all that can be accomplished by physical powers; and who presume, that our knowledge upon this subject has attained its ultimate point of improvement, and consequently display no interest in the subject of its ultimate furtherance, the opinion of a distinguished correspondent would seem to be peculiarly appropriate, in avowing that, "from minds capable of adopting such a sentiment science can receive no impulse, and human intelligence no especial illustration."

The Euphorbia corollata first attracted my attention in the year 1819; and in the spring of 1821, I transmitted several of its recent roots to Professor BIGELOW, who transplanted them in the Botanic garden, and in his American Botany he has described and figured the plant.

The genus Euphorbia was placed by LINNÆUS in the class *Dodecandria*, and the order *Trigynia*. MICHAUX has transferred this genus to *Monœcia, Monadelphia*. It belongs to

the natural orders of *Tricoccæ* of LINNÆUS, and *Euphorbiæ* of JUSSIEU.

GENERIC CHARACTER.—The flowers of the genus Euphorbia are characterized by a *calyciform involucrum* with *four* or *five segments*, like *petals*, and the same number of *interior segments* like *nectaries*. *Stamens* twelve or more. *Filaments articulated*. Fertile flower *solitary*, *stipitate*, *naked*. *Styles three*, *bifid*. *Capsule*, *three-seeded*.

SPECIFIC CHARACTER.—The species corollata is distinguished from all of the other individuals belonging to this extensive genus by its *five-rayed umbel*, which is *three-parted* and *dichotomous*. The *leaves* and *involucra* are *oblong* and *obtuse*. The *segments* of the calyx are *obovate*, *petaloid*, and *coloured*.

Professor Bigelow has given the following excellent discription of this plant. He says it

"Has a large branching root, which sends up a number of stems, frequently from two to five feet in height. They are erect, round, and in most instances simple. The leaves are scattered, sessile, oblong, obovate or linear, a little revolute at the margin, smooth in some plants, very hairy in others. The stem divides at the top into a large, fine-rayed umbel, supported by an involucrum of as many leaves. Not unfrequently a small axillary branch or two arise from the sides of the stem below the umbel. The rays of the umbel are repeatedly trifid or dichotomous, each fork being attended by two leaflets and a flower. The top of the stem or centre of the umbel is turgid, and often bears a precocious flower. The calyx is large, rotate, white, with fine obtuse petal like segments, from which the name of the species has been taken. The nectaries or inner segments are fine, very small, obtuse projections, situated at the base of the segments. Stamens a dozen or more emerging, two or three at a time with double anthers. Germ pedicelled. Capsule three-celled."

The Euphorbia corollata is a very common plant in some parts of Virginia and Pennsylvania. In some districts of Maryland, and more particularly in Anne Arundel county, it grows in the greatest abundance, where it is recognized by the common and local appellations of *milkweed*, *snake's milk*, *ipe-*

cacuanha, and *Indian* physic. It delights and flourishes in a poor, dry, and sandy soil. It is rarely discovered in the woods, but in fields which are cultivated every two or three years. The farmers in Anne Arundel county, where the fields are literally overrun with it, have frequently told me that the small grain sustains considerable injury from its rapid growth in the early part of the spring, checking the natural process and progress of vegetation in the grain, and that the ordinary means which are made use of, (such as ploughing and harrowing,) in order to kill bluegrass, have the effect of increasing the quantity and rapid growth of this plant. It is never eaten by animals. The stalks which arise from the common trunk of the root, are sometimes as many as thirty, and from this down to a single one. The largest roots that I recollect seeing, measured from an inch to two inches and a half in circumference.

Solubility.—Alcohol, wine and water are the best menstrua for extracting its active qualities. The alcoholic and watery extracts are equally active. Two thousand one hundred and sixty grains of the recent root afforded one hundred and two grains of aqueous extract; and the same amount, by digesting in alcohol, gave one hundred and twenty-three grains of alcoholic extract.

Desirous of ascertaining the relative proportions of *epidermis*, *cortical*, and *ligneous* matter entering into the organization of the root of the Euphorbia corollata, I selected a portion of healthy root, which weighed 893 grains: on examination the *epidermis* weighed 84 grains, the *ligneous* or woody part 189, and the *cortex* or bark 620. From these results it seems that the root is made up of nearly two-thirds of the part in which its activity exclusively resides. The separation of these several parts of the root I effected with the greatest possible care.

Chemical composition.—I digested for seven days, ʒij. of the powdered root in ℥iij. of sulphuric ether; this was then passed through bibulous paper, which on the addition of rectified alcohol, (carefully prepared by myself,) gave a precipitate. 3is. of the root, which had been digested for the same period in ℥iij. of rectified alcohol, assumed, on the addition of

distilled water, a lacteous turbidness.—3ij. of the root which had been permitted to digest for four days in distilled water, after being filtered, exhibited, on the addition of rectified alcohol, a turbid aspect. From these results the chemical composition of this root may be inferred to consist of caoutchouc, resin, and mucous. This examination was made in imitation of that instituted by Professor Bigelow, and with effects produced by the concurrence of the same coöperating causes, perfectly analogous to those which were accomplished in his hands.

Incompatible substances.—Kino exhibited in combination with the corollata, interferes so much with its medicinal operation as to render it perfectly inert; while the kino itself undergoes such a change in its remedial powers, as a consequence of its consociation with the corollata, as entirely to alter the character upon which its astringency depends. Catechu produces the same effect, and the same interchange of reciprocal action occurs. From this circumstance I am led to the conclusion, that all astringent vegetable substances are at variance with the therapeutic operation of the corollata. In two instances I took twenty grains of the powdered root out of a phial, containing the article sufficiently active to excite *emesis*, in combination with six grains of powdered kino, and no sensible effect of the corollata was experienced, or did the kino display the least perceptible astringent operation in altering the period at which I usually have a dejection, that is, about half an hour after breakfast every morning. Nine grains of the catechu, with twenty-five of the corollata was attended with exactly consimilar results. Opium given in conjunction with it, interferes only with its emetic operation, and it should not therefore be given in combination when the object of the practitioner is to produce *emesis*. Acetic acid interrupted its ordinary operation in two instances, (and the only two cases in which I tried the experiment on myself,) by causing it to pass off by the bowels.

Pharmaceutic preparations.—The vin. Euphorbiæ corollatæ, and the pulvis corollatæ compositus. The former preparation I have made in the following way:—℞. Radicis Euphor-

biæ corollatæ, ℥i.; vini albi hispanæ, octarius unus. dosis ʒij. ad ℥ss.; emesis provocandi. The latter formula is in imitation of the pulvis ipecacuanhæ compositus, and does not differ in the proportions, except in substituting the corollata in the place of the ipecacuanha. Both of these preparations are as prompt and effectual as remedial agents.

Medical uses.—This vegetable is emetic, diaphoretic, expectorant, and epispastic. As an emetic it is mild and certain in its operation, rarely occasioning pain or spasms, and exciting little previous nausea or giddiness; possessing an advantage over some other remedies of this class, that when it does not prove emetic, it passes off by the bowels. The dose of the powdered root that is required to excite emesis, is from fifteen to twenty grains. This substance is better calculated to effect certain indications, than the more nauseating articles belonging to this class of remedies; and as the judicious practitioner, in the selection of an emetic, will always be guided by the nature of the indication which he intends to fulfil, if his object be to evacuate the stomach quickly and completely, he will avoid those emetics that are distinguished by their nauseating tendency, as in cases of disease which depend on a disordered state of the stomach, in connexion with undue distention, and the presence of acrid and indigestible matter: if, on the other hand, his intention be to influence some remote organ through the sympathetic powers of the stomach, an emetic of an opposite tendency may be better calculated to answer such indications, inasmuch as the nausea which they induce, greatly lessens the force of the circulation; and as the energy of absorption is generally in an increase ratio to that of the circulation, we frequently obtain from nauseating emetics considerable assistance in the treatment of different dropsical affections. The corollata is only calculated to effect the indications which are accomplished by the primary operation of emetics, for whenever our object is to evacuate the stomach, and prevent absorption, we must take care to cut short the nauseating stage, (by such articles as produce little or none of this effect,) a precaution which is highly important in the management of cases in which poisonous substances have

been taken into the stomach. When it is administered with the view of procuring its diaphoretic operation, the quantity exhibited at each dose should not exceed four grains, and this proportion should be given every three hours. The pulvis corollatæ compositus may very frequently be used, particularly when a stimulant diaphoretic is indicated; for from the operation of this compound remedial agent, it would seem that whilst the opium increases the force of the circulation, the corollata relaxes the exhalant vessels, and consequently induces a copious diaphoresis. The dose of this combination is the same as that of the Dover's powder. The expectorant operation of this plant may be procured in the dose of three grains, occasionally exhibited in a little honey, sugar and water, or any other suitable vehicle. In relation to its epispastic property, I would remark, that it possesses an advantage over the ointment prepared with the antimonium tartarizatum, in producing a beautiful display of postules in twelve or fifteen hours after its application, which passes off in two or three days, without occasioning the least inconvenience whatever to the patient. The root in its recent state is merely to be applied contused to any part of the body, and permitted to remain a few minutes only, when a sufficient quantity of the lactescent matter will remain to produce the intended effect. A continuation of the pustular eruption may be kept up, by making an application of the contused root every forty-eight hours.—*Am. Jour. of the Med. Sciences.*

MISCELLANY.

Poppy Oil.—Mr. Allen states that the Poppy is extensively cultivated, in some parts of France, for the sole object of procuring the fine seed, to be crushed for the purpose of expressing the oil. This oil is limpid, and at the same time destitute of any flavour, being insipid and tasteless. It is sometimes used as a substitute for the olive oil, but more generally mixed with it, to adulterate the more costly oil with a cheaper one. Considerable quantities of poppy oil are shipped to the south of France, and even to Italy, to be mixed there with olive oil, and parcels of it are sent to France, from whence it is shipped to the United States, where a pipe of poppy oil is rarely entered at the custom house.

Practical Tourist, 2. *page* 161.

Supposed Artificial Malic Acid.—M. Guerin observes that Scheeler obtained a peculiar acid, which he called malic acid, by the action of nitric acid upon mucilage. Fourcroy and Vanquelin repeated these experiments, and described a new uncrystallizable acid, which they considered as identical with the malic acid of fruits, this acid not having then been obtained in a crystalline state.

In order to prepare this artificial malic acid, M. Guerin employed the following process:—one pound of gum arabic was treated with two parts of nitric acid, diluted with half its weight of water; the mixture was heated moderately until all the gum was dissolved, and the solution was then slowly boiled for two hours. After dilution with water, it was neutralized with ammonia; muriate of lime was then added to precipitate the oxalic acid formed, and the whole was thrown on a filter; the filtered liquor was yellowish red, and a solution of nitrate of lead was added to it; a yellowish precipitate was obtained, which, after being well washed, was decomposed by a current of sulphuretted hydrogen, and the acid liquor was evaporated with a gentle heat; this was again saturated with ammonia, and decomposed by nitrate of lead; and the precipitate decomposed by sulphuretted hydrogen, gave an acid liquor, which, though evaporated to the consistence of a syrup, gave no crystals.

The properties of this acid are—that it is slightly yellow, reddens litmus, its taste resembles that of malic acid, is inodorous, and more dense

than water. It is very soluble, both in water and in alcohol; it causes precipitation in lime, barytes, and strontia water, which is redissolved by excess of acid. The salts of lead give a bulky precipitate with it, which is insoluble in cold water, and in excess of the acid; boiling water dissolves a small portion, which crystallizes as the solution cools. When this acid is neutralized by ammonia, and heated, an acid salt is formed, which crystallizes in colourless prisms with a rectangular base. Its taste is slightly acid; cold water dissolves it sparingly, but boiling water readily. It is insoluble in alcohol. This acid may be obtained by heating one part of sugar or starch with half a part of nitric acid, in the same manner as already described with gum. M. Guerin concludes that this acid is not the malic, as has generally been supposed, but that it is a new acid perfectly distinct from all others.

Ann. de Chim. xlix. *and Phil. Mag. Mar.* 1833.

Cure for the Toothache.—Etmuller states that the juice of the root of the *Iris lutea* will cure the toothache, either by being rubbed on the gums, or chewed. It acts, in all probability, by its stimulating properties.

Johnson's Flora.

Mucic Acid.—M. Guerin remarks that gum and sugar of milk are the only substances which, by being heated with nitric acid, yield mucic and oxalic acids; and he thought it desirable to ascertain which of them yielded the most. Water, at 65° dissolved 10.91 per cent. of sugar of milk, and at 212°, 96.70 per cent.; 100 parts of it heated with 600 parts of nitric acid gave as a maximum product 28.62 of mucic acid, mixed with oxalic acid; gum Senegal, which consists of arabin and water, gave only 16.70 per cent. of mucic acid mixed with oxalic; but then sugar of milk contains less than one per cent. of water, while gum Senegal contains 16.1 per cent. and 2.78 per cent. more of ashes. Mucic acid, obtained either from sugar of milk or gum, when dissolved in boiling water, crystallizes on cooling in small scales, which present on their edges small crystals, which appeared to be prisms with a rectangular base. *Phil. Mag. March*, 1833.

Chemical Agency of Water.—According to M. Pelouze, anhydrous alcohol, sulphuric ether, and acetic ether, disguise, more or less completely, the properties of the strongest acids. Their solution does not redden litmus, nor decompose a great number of carbonates. A mixture of about 6 parts of absolute alcohol, and one part of concentrated sulphuric acid does not act upon any neutral carbonate, but it immediately decomposes acetate of potash, and disengages abundant vapours of vinegar mixed with acetic ether.

It is well known, since the labours of Fennell and Serullas, that sulphovinic acid is formed in the cold, in a mixture of alcohol and concen-

trated sulphuric acid, but whatever may be the excess of alcohol employed, free sulphuric acid remains in the mixture. It is therefore reasonable to conclude, from the above mentioned experiment, that an alcoholic solution of sulphovinic and sulphuric acid is incapable of decomposing a carbonate; water must be added that the action may occur. A solution of muriatic acid gas in alcohol, so concentrated that when diluted with several hundred times its volume of water it reddens litmus paper, attacks artificial carbonate of lime, and even marble itself with extreme violence. It also attacks, but less strongly, the carbonate of barytes, strontia, magnesia and soda, even when they have been previously calcined, but on the contrary it does not decompose carbonate of potash. Concentrated nitric acid mixed with alcohol does not decompose carbonate of potash; it acts energetically upon the carbonates of lime and strontia; those of barytes, magnesia, and soda are also attacked, but much more slowly.

Vegetable acids produce similar effects; the tartaric, paratartaric, citric, and oxalic acids all dissolve in notable quantity in alcohol; the solution of the two first, did not act upon any of the numerous carbonates with which it was placed in contact. The alcoholic solution of citric acid does not act upon the carbonate of strontia, lime, or barytes, but it attacks the carbonates of potash and magnesia, but the latter with extreme slowness. Oxalic acid which disengages carbonic acid from the carbonates of strontia, magnesia and barytes, does not act at all upon carbonate of potash or of lime. These facts show, that on many occasions in which alcohol is employed in chemical investigations, it will prevent the operator from discovering the presence of an excess of acid by litmus paper.

Mr. Pelouze remarks that some of the facts cited may be satisfactorily explained, whilst others are quite inexplicable. What is the reason, for example, why concentrated acetic acid does not act upon carbonate of lime, while it combines so energetically with caustic lime? why is water required in the first case, and useless in the second?—for in both cases, the same product is obtained. Thus acetic acid dissolved in alcohol, and acetic acid dissolved in water, may be considered, with relation to certain bodies, chalk for example, as acids entirely distinct from each other. Acetic acid dissolved in alcohol is to the carbonates, what carbonic acid is to the acetates dissolved in alcohol; that is to say, in one case there is no action, and in the other, it is strong. Chloride of strontium, chloride of copper, and nitrate of copper, when dissolved in alchohol, were not decomposed by exposure to a long continued stream of carbonic acid gas.

The presence of water does not appear to be always necessary to chemical action; in many cases it may occur with other solvents. Oxalic acid, dried under the receiver of the air pump and dissolved in absolute alcohol, precipitates a similar solution of nitrate. *Ann. de Chim. t.* l.

Secale cornutum.—This article, it is known, deteriorates greatly by keeping it in a state of powder; the plan of drying it thoroughly, before pulverizing it, also dissipates much of its powers. A writer in the London Medical and Surgical Journal states that the best plan is to preserve it in covered vessels, in substance, and to reduce it to powder, when wanted, by means of a common coffee mill.

Chloride of Gold and Sodium.—Dissolve 96 grains of pure gold in a sufficient quantity of nitro-muriatic acid, evaporate and crystallize; dissolve the crystals in distilled water and add 30 grains of precipitated chloride of sodium. Evaporate and crystallize. This salt is slightly deliquescent, and should therefore be kept in a glass stoppered vial.

Lond. Med. and Sur. Jour.

Method of Cutting Glass Vessels without Cracking.—Fill the vessel with oil to the place where it is intended to be cut. Immerse a red hot iron to an inch below this line; the heat will produce combustion, with evaporation, which will cut the vessel around at the surface of the oil. Otherwise—mark with a file, the glass, around the place it is to be divided, dip a string in spirits of turpentine, tie it round this mark, and then set it on fire, and the glass will crack along the line marked.

Jour. de Con. Usuel. and Silliman's Journal.

Lute for Bottling Wine, Tinctures &c.—One part rosin, one-fourth part yellow wax, one-sixteenth part tallow; add one-half part yellow ochre, or red or black ochre or coal. Keep these ingredients melted over a chafing dish, and when the bottle is well corked, dip the neck into the melted mass. *Idem.*

Watered (moire) Brass.—Brass ornaments, boiled in a solution of sulphate of copper, becomes watered, in the same manner as tin plates from the effect of an acid. One piece tried was peculiarly striking, having spangles resembling opal, united with a deep coloured ground formed of finer reddish crystals. Certain brasses assume the appearance of porphyry, others of granite, of various shades, according to the proportions of zinc or copper contained in them. In some cases the brass becomes of a dark colour, without reflections; but a slight friction and a little varnish will give the desired appearance. A few iron nails left in the solution will quicken the operation. The solution should be strong.

Journ. de Connais Usuel.

Antidote to certain Poisons.—The fruit of the *Feuillea cordifolia*, a native of South America, has been ascertained to be a powerful antidote against vegetable poisons. Mr. E. Drapiez poisoned dogs with the *Rhus toxicodendron*, hemlock and *Nux vomica*. All those that had not the anti-

dote administered, died, whilst in cases where the Fueillea was given, the animals recovered. *Murat & Delens Dict. Univer. Mat. Med. t.* 3.

Hydrocyanic Acid.—A species of Ipomæa, the *I. dissecta* abounds in hydrocyanic acid to that degree, that Dr. Nicholson of Antigua, informed Dr. Hooker, that "if this medicine shall be found deserving of the high character which some physicians have bestowed upon it, the *I. dissecta* may become valuable in a country where the prussic acid cannot be preserved many days in a pure state." *Botan. Mag. Mar.* 1832.

Otaheitian Arrow Root.—This is prepared from the root of the *Tacca pinnatifida*, which grows in great abundance in Otaheite and other islands in the Pacific. The root is round, white, smooth, and from two to three inches in diameter. When a sufficient number of the roots are collected, they are taken to a running stream, or to the sea side, and washed; the outer skin is carefully scraped off, and the root is then reduced to a pulp, by means of a rasp, made by winding twine of cocoa nut husk, round a board. The pulp, when prepared, is washed first with sea water, through a seive made of the fibrous web, which covers the ground formed of the cocoa nut palm; and the starch or arrow root, being carried through with the water, is received into a wooden trough. This fecula is allowed to settle for a few days, the water is then strained, or more properly, poured off, and the sediment again washed in fresh water; this is repeated three times, after which the fecula is made into balls of seven or eight inches in diameter, and dried in the sun; after they are dry, they are pounded and the powder is spread in the sun for some hours, after which it is carefully wrapped up, placed in baskets, and kept for use. It can be procured at from 1½d. to 2d. sterling, (3 to 5 cents,) a pound. Its quality is excellent. *Gardeners' Mag.* 1832.

Pate de Guimauve.—M. Cules, of Paris, gives the following formula as the best:

℞.	White contused gum arabic,	lb. ij ℥iv
	White sugar,	lb. ij
	White of eggs,	No. xx.
	Double orange flower,	℥vi

Dissolve in the cold, or by a gentle heat, the gum and sugar in a sufficient quantity of water, stirring it well. Pass the solution through a linen cloth, and next day gently decant it into an evaporating dish, so as to leave the fine sand which had passed with the solution; evaporate without boiling, constantly stirring, to the consistence of clear honey; add at two operations, the whites of eggs, and stir briskly; continue the evaporation, taking care that the mixture does not burn; when almost done, add the orange flower water, and continue to stir, till the mixture will no longer

adhere to the hand, then pour the whole on a marble, dusted with starch, and keep in a tin box. *Journ. de Pharm. Nov.* 1832.

Febrifuge Powers of the Holly.—The leaves of the holly have been indicated by Dr. Rousseau as febrifuge. The infusion or the powder has been used with success. But, it is more advantageous to employ the ilicine or active and bitter principle of the holly. This substance, which is deliquescent, uncrystallizable, and doubtless impure, is obtained, according to M. Deleschamps, by dissolving the alcoholic extract of the leaves of the holly, in water, and in successively treating it with the sub-acetate of lead, sulphuric acid, and carbonate of lime. The filtered and evaporated product is then to be dissolved in alcohol, the mixture filtered and evaporated in shallow vessels.

Two pounds of the fresh leaves lose, by drying, 1 lb. 4 ounces, and afford 3 ounces, 3 drachms, 48 grains (French weight,) of dry extract. Two pounds of dry leaves afford 5 ounces, 3 drachms, 24 grains of dry extract, or of ilicine 1 ounce, 7 drachms, 18 grains.

Journ. de Pharm. Dec. 1833.

New Substance from Sarsparilla.—M. Thubeuf has obtained a new substance from sarsparilla, by means of alcohol. It is white and tasteless, when pure, soluble in alcohol and water, communicating to the latter the saponaceous property which is remarked in decoctions and infusions of sarsparilla; it crystallizes in an aggregated form; thrown on burning coals it gives out a smell somewhat like that of benzoin. Ten pounds of sarsparilla afforded 3 oz. 1 dr. of this substance in an impure form. *Ib.*

Instantaneous Vesication.—M. Pigeux proposes the following plan:—A piece of linen, cloth, or even paper, is cut to the size of the vesication that is wished; this is to be dipped into alcohol at 26° or 30°, or even into eau de Cologne or good brandy, and drained so as not to permit any of the liquid to spread; it is then to be placed on the skin, and set on fire. The flame lasts but a few seconds, and the epidermis may be readily removed. To prevent any possibility of the flame extending beyond the proper limits, the vesicatory is to be surrounded by a compress wetted with water. *Ibid.*

Gonorrhœa.—M. Ouerin de Marmers states that he has found the following to be exceedingly efficacious in the secondary stage of Gonorrhœa, or after the inflammatory stage has been removed by bleeding, diet &c.

℞. Balsam copaiba,		Infus. pip. cubeb.	℥ss
Syrup diacodium,	*a a* ℥i	Ol. anis.	gtts iij
Pulv. gum arabic	ʒijj	Coc. cacti.	gr. ij
Aqua cinnam.	℥iss		

The dose of this mixture is two table spoonfulls a day, one in the morning, the other at night. *Ibid.*

Medical History.—The medical properties of the Collinsonia did not escape the notice of Shoepf, who states that it had been found useful in a variety of diseases. It, however, attracted but little attention from the physician, though it always maintained its ground as a domestic remedy of great efficacy, among the inhabitants of certain districts of country.

The fullest treatise on it we have met with is by Dr. Charles Hooker, of New Haven. This gentleman appears to have experimented with it on a tolerably large scale, and we shall freely avail ourselves of his labours in a subsequent part of this paper.

Hydriodate of Potassa.—In a lecture before the Medico-Botanical Society, Mr. Everett stated that the hydriodate of potassa of commerce was generally adulterated. He stated the best plan for procuring it was as follows: pour eight ounces of distilled water into a phial, and add to it 500 grains of iodine, and 200 grains of polished iron wire, cut into small pieces.—The mixture is to stand for three or four days, when it will assume a dark greenish colour; it is then to be filtered, and 428 grains of bicarbonate of potassa added. *Lond. Med. and Surg. Journ. Jan.* 1833.

New species of Opium.—Dr. Epps, in one of his lectures, gave an account of a new species of opium, which may be denominated the *Persian*. It is in small cylindrical pieces, rolled up in polished paper. On removing the covering, the drug appears of a reddish brown colour, but much lighter than the Turkey opium. It has a very fœtid, heavy smell, and a bitter acrid taste. *Ibid.*

New principle in Opium.—M. Robiquet has announced the discovery of another new principle in opium, to which he has given the name of *paverine*, which is soluble in water. It is highly azoted, saturates acids, and does not dissolve in potassa. It is poisonous, and acts in a very marked manner on the spinal marrow. *Journ. de Pharm. Nov.* 1832.

Delphine, Veratrine, and Solanine.—Mr. O. Henry, gives the following mode of preparing these alkaloids. To extract *delphine* he takes a certain quantity of the seeds of the stavesacre (*Delphinum staphysagria*,) in powder, treats by a gentle heat, several times, with alcohol at 32°, with the addition of a small quantity of sulphuric acid (20 to 30 grammes to each kilogramme of the seed;) the alcohol being decanted and expressed from the marc, a sensible excess of finely powdered slacked lime is to be added—this produces a flocculent precipitate of a yellow or greenish colour, and the alcohol also assumes a yellowish tint. This last being carefully filtered and distilled, leaves a greasy, greenish substance, almost insoluble in water, and which may be deprived of all the yellow colouring matter, by washing with tepid water. It is then to be treated with distilled sulphuric acid, and filtered whilst hot, for on cooling it often assumes a gelatinous appearance. This clear, amber coloured liquid, on the addition of

a slight excess of ammonia, affords a flocculent white precipitate, which is to be washed, and dissolved in alcohol at 35°. On evaporating the alcohol, a resinoid residue is obtained, which is the *delphine*, which will become friable and pulverizeable on being exposed to a moist atmosphere, or by being moistened with water.

Veratrine is readily procured from the seeds of the *Veratrum sabadilla*, by the same process; and in acting in the same way on the stems of the *Solanum dulcarmara*, an alkaloid can be obtained, which Mr. Henry thinks is identical with solanine. *Journ. de Pharm. Dec.* 1832.

Chlorate of Potassa.—M. Ganassini, of Verona, gives the following process: Take a pound of chloride of calcium in a concentrated solution, and dissolve in it an ounce and a half of hydrochlorate of potassa in crystals. Let the mixture stand for a few days. Afterwards evaporate and concentrate the liquid, and on cooling, crystals of chlorate of potassa will be obtained, amounting to about ten drachms. *Ibid. Jan.* 1832.

Root of the Elder in Dropsy.—M. Martin Solon has been very successful in the removal of dropsical effusions, by the administration of the juice of the root of the elder. This remedy is prepared as follows: the roots are washed, and deprived of their epidermis by rubbing them with a coarse cloth, and the cortical portion then rasped off, pounded in a mortar, exposed to strong pressure, and the juice filtered. This juice is of a reddish brown colour, transparent, of an insipid, rather nauseous smell, and of a sweetish taste. It is to be taken in the dose of two ounces in the morning. *Journ. de Pharm. Dec.* 1832.

Camphor of Borneo.—It has long been known that there has been in the island of Borneo, a particular genus of tree, which, to use the quaint language of Kæmpfer, *is not of the blood of daphne*, that is, it does not belong to the laurels, although it affords camphor. It also occurs at Sumatra. (Kæmpfer's Amœn. exot. p. 773.) Grimm also noticed, in 1683, in the *Ephem. Nat. Cur. Dec.* 2. *Obs.* 163. *p.* 371. Finally, Fouttuyn, in *Verhandeling maastch.* No. 21, p. 266, proved it should not be confounded with the camphor laurel. The best description of the camphor tree of Borneo has been given by Colebrooke, in Asiatic Researches, vol. 12. p. 540. He gives the figure of it under the name of *Dipterocarpus*, from the fruit having two wings, like those of the seed of the maple. The *Dryobalonops camphora* of Sumatra, Colebrooke, is the *Pterygium teres*, Correa. Annal. Museum, 10. p. 159. The *Shorea robusta*, Roxburgh, which is also regarded as a camphor tree, affords an odorous resin, which is used instead of incense in the pagodas of India. *Ibid.*

Fig. 1

Fig 2.

Fig 3.

Fig 4.

Fig 5.

Drawn from Nature by W.P.C. Barton.

Tanner, Vallance, Kearny, & Co. Sc.

CHENOPODIUM ANTHELMINTICUM.

(Jerusalem Oak.)